# PCA-6179

Full-size socket 370 Intel® Pentium® III processor-based PCI/ISA-bus CPU card

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Part No. 2006617910

2nd Edition Printed in Taiwan Nov. 2000

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| PCA-6179 Series comparison table | | | | | |
|---|---|---|---|---|---|
| **Model** | **PCA-6179L** | **PCA-6179V** | **PCA-6179VE** | **PCA-6179VS** | **PCA-6179F** |
| **CPU:** Intel®Pentium® III Socket 370 | ✓ | ✓ | ✓ | ✓ | ✓ |
| **System chipset:** VIA Apollo Pro 133 A | ✓ | ✓ | ✓ | ✓ | ✓ |
| **BIOS:** Award P&P Flash BIOS | ✓ | ✓ | ✓ | ✓ | ✓ |
| **L2 Cache:** 256 KB (on CPU) | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Max. System RAM:** 1.5 GB (3 x 168-pin sockets) | ✓ | ✓ | ✓ | ✓ | ✓ |
| **ISA High Drive:** up to 64 mA | ✓ | ✓ | ✓ | ✓ | ✓ |
| **USB Port** | 2 | 2 | 2 | 2 | 2 |
| **2 EIDE connectors** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Solid state disk:** DOC© 2000 | ✓ | ✓ | ✓ | ✓ | ✓ |
| **2 serial, 1 parallel ports** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **VGA:** AGP/VGA (ATI Rage Pro 4 XL) | ✗ | ✓ | ✓ | ✓ | ✓ |
| **LAN:** 10/100Base-T Ethernet (chipset: Realtek 8139C) | ✗ | ✗ | ✓ | ✗ | ✓ |
| **Ultra 2 SCSI (SYM53C895)** | ✗ | ✗ | ✗ | ✓ | ✓ |

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4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## Initial Inspection

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 PCA-6179 socket 370 Pentium III® processor-based single board computer
- 1 Pentium III® processor, (optional) 1 cooling fan, P/N: 1759205400
- 1 PCA-6179 startup Manual
- 1 CD driver utility and manual (in PDF format)
- 4 SCSI driver disks (optional)
- 1 FDD cable, P/N: 1701340703
- 2 UDMA 66 HDD cables, P/N: 1701400452
- 1 printer (parallel port) cable & COM port cable kit, P/N: 1700060305
- 1 ATX-to-PS/2 power cable, P/N: 1700000450
- 1 ivory cable for PS/2 keyboard and PS/2 mouse, P/N: 1700060202
- 1 SCSI cable (optional), P/N 1701060000
- 1 USB cable (optional), P/N 1700100170

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

We have carefully inspected the PCA-6179 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt.

As you unpack the PCA-6179, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

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CHAPTER 1

# Hardware Configuration

This chapter gives background information on the PCA-6179. It then shows you how to configure the card to match your application and prepare it for installation into your PC.

Sections include:

- Introduction
- Features
- Specifications
- Board Layout
- Jumpers and Connectors
- Safety Precautions
- Jumper Settings
- System Memory
- Memory Installation Procedures
- Cache Memory
- CPU Installation

## 1.1 Introduction

The PCA-6179 Series all-in-one industrial grade CPU card uses Intel's highly acclaimed Pentium® III processor, together with the VIA Apollo Pro133A chipset. The card works with standard ISA or PCI/ISA-bus passive backplanes.

The CPU provides 256 KB on-CPU L2 cache, eliminating the need for external SRAM chips. It has two PCI EIDE interfaces (for up to four devices) and a floppy disk drive interface (for up to two devices). Other features include two RS-232 serial ports (16C550 UARTs with 16-byte FIFO or compatible), one enhanced parallel port (supports EPP/ECP) and two USB (Universal Serial Bus) ports. The PCI enhanced IDE controller supports Ultra DMA/33/66 and PIO Mode 4 operation. This provides data transfer rates of over 33/66 MB/sec. System BIOS supports boot-up from an IDE CD-ROM, SCSI CD-ROM and LS-120.

A backup of CMOS data is stored in the Flash memory, which protects data even after a battery failure. Also included is a 63-level watchdog timer, which resets the CPU or generates an interrupt if a program cannot be executed normally. This enables reliable operation in unattended environments.

The PCA-6179 Series offers several impressive industrial features such as a VGA (AGP) controller, a PCI Ultra2 SCSI controller, a 10/100Base-T networking controller, three DIMM slots for a total of 1.5 GB RAM memory, and an ISA High Drive. In addition, the PCA-6179 Series supports a solid state disk (SSD) using M-Systems Corporation's DiskOnChip® 2000 Flash disk, for up to 144 MB of non-volatile, reliable memory that is not vulnerable to the hazards of an industrial computing environment. All these make it an ideal choice for applications that require both high performance and full functionality.

*Note:* *Some of the features mentioned above are not available with all models. For more information about the specifications of a particular model, see Section 1.3: Specifications.*

## 1.2 Features

1. **Fan status monitoring and alarm:** To prevent system overheating and damage, the CPU fan can be monitored for speed and failure. The fan is set for its normal RPM range and alarm thresholds.
2. **Temperature monitoring and alert**: To prevent system overheating and damage, the CPU card supports processor thermal sensing and auto-protection.
3. **Voltage monitoring and alert**: System voltage levels are monitored to ensure stable current flows to critical components. Voltage specifications will become even more critical for processors of the future. Thus monitoring will become ever more necessary to ensure proper system configuration and management.
4. **ATX soft power switch**: Through the BIOS, the power button can be defined as the "Standby" (aka "Suspend" or "Sleep") button or as the "Soft-Off" button (see Section 3.6.6 Soft-off by PWR-BTN). Regardless of the setting, pushing the power button for more than 4 seconds will enter the Soft-Off mode.
5. **Power-on by modem (requires modem)**: This allows a computer to be turned on remotely through an internal or external modem. Users can thus access information on their computers from anywhere in the world.
6. **Power-on by LAN:** This allows you to remotely power up your system through your network by sending a wake-up frame or signal. With this feature, you can remotely upload/ download data to/from systems during off-peak hours.
7. **Message LED**: Chassis LEDs now act as information providers. The way a particular LED illuminates indicates the stage the computer is in. A single glimpse provides useful information to the user.

8. **CMOS RAM backup**: When BIOS CMOS setup has been completed, data in the CMOS RAM is automatically backed up to the Flash ROM. This is particularly useful in industrial environments which may cause soft errors. Upon such an error occurring, BIOS will check the data, and automatically restore the original data for booting.

9. **More:**
   - Additional metal bracket for CPU stabilization
   - **Power On by Alarm**: Powers up your computer at a certain time
   - Standard IR supports optional remote control package for wireless interfacing with external peripherals, personal gadgets.
   - **Virus warning**: During and after system boot-up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, a warning message will be displayed. You can then run your anti-virus program to locate the problem

## 1.3 Specifications

### 1.3.1 System

- **CPU**: Intel Pentium® III processor, up to 933+ MHz, FSB 100/133 MHz
- **BIOS**: Award Flash BIOS, 2 Mbit
- **System Chipset:** VIA Apollo Pro133A
- **Green function**: Supports power management operation via BIOS. Activated by keyboard or mouse activity
- **PCI enhanced IDE hard disk drive interface**: Supports up to four IDE (AT-bus) large hard disk drives or other enhanced IDE devices. Supports PIO mode 4 (16.67 MB/s data transfer rate) and Ultra DMA/33/66 (33/66 MB/s data transfer rate). BIOS enabled/ disabled
- **Floppy disk drive interface**: Supports up to two floppy disk drives, 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB). BIOS enabled/disabled

### 1.3.2 Memory

- **RAM**: Up to 1.5GB in three available 168-pin DIMM sockets. Supports PC100/ PC133-compliant SDRAMs
- **ECC (parity DRAM only)**: Modules can detect multi-bit memory errors. Correction of 1-bit memory errors

### 1.3.3 Input/Output

- **Bus interface**: PCI/ISA bus, PICMG compliant
- **Enhanced parallel port**: Configurable to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Supports EPP/ECP
- **Serial ports**: Two RS-232 ports with 16C550 UARTs (or compatible) with 16-byte FIFO buffer. Supports speeds up to 115.2 Kbps. Ports can be individually configured to COM1, COM2 or disabled
- **Keyboard and PS/2 mouse connector**: A 6-pin mini-DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. An onboard keyboard pin header connector is also available
- **ISA driver current**: 64 mA (High Drive)

### 1.3.4 VGA interface

- **Supports AGP 4X, 133 MHz**
- **Controller**: ATI 3D Rage 128 Pro 4XL
- **Display memory**: 8 MB VRAM

### 1.3.5 SCSI interface

- **PCI SCSI**: Supports 32-bit PCI interface and Ultra2 SCSI or legacy single-ended devices; data transfer up to 80 MB/sec.
- **Chipset:** Symbios SYM53C895

### 1.3.6 Ethernet LAN

- **Supports 10/100Base-T Ethernet networking**
- **Chipset**: Realtek 8139C

### 1.3.7 Solid state disk

- **Supports DOC® 2000 up to 144 MB**

### 1.3.8 Industrial features

- **Watchdog timer**: Can generate a system reset or IRQ11. The watchdog timer is programmable, with each unit equal to one second (63 levels). The program uses I/O port hex 443h to control the watchdog timer

### 1.3.9 Mechanical and environmental specifications

- **Operating temperature**: 0 ~ 60° C (32 ~ 140° F)
- **Storage temperature**: -40 ~ 60° C (-40 ~ 140° F)
- **Humidity**: 20 ~ 95% non-condensing
- **Power supply voltage**: +5 V, ±12 V
- **Power consumption:**

  +5 V @ 4.75 A (for Pentium III Coppermine® 600 MHz)
- **Board size**: 338 x 122 mm (13.3" x 4.8")
- **Board weight**: 0.5 kg (1.2 lb)

## 1.4 Board Layout: Main Features

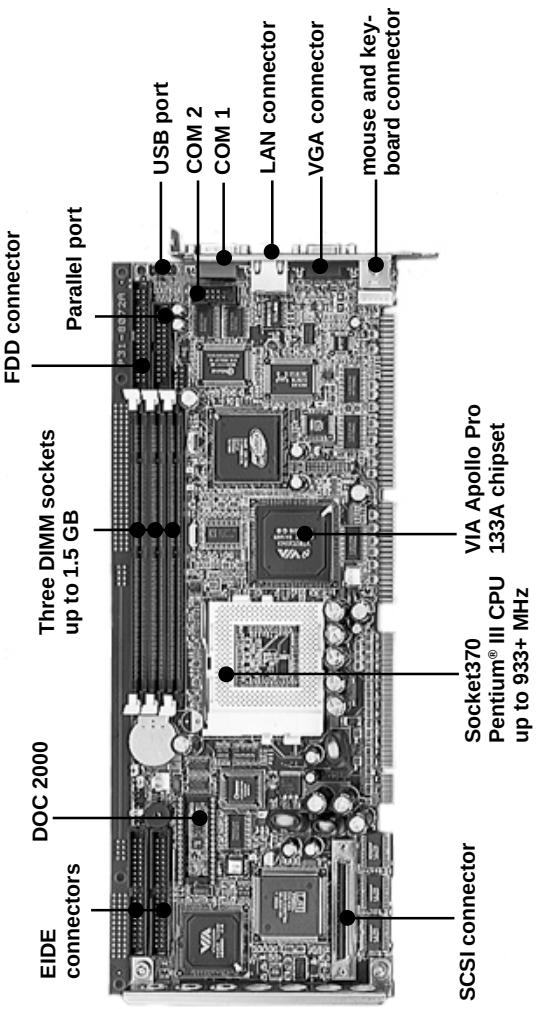



**Figure 1-1: Board layout: main features**

## 1.5 Jumpers and Connectors

Connectors on the PCA-6179 board link it to external devices such as hard disk drives and a keyboard. In addition, the board has a number of jumpers used to configure your system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your card.

Table 1-1: Jumpers

| Label | Function |
|---|---|
| J1 | CMOS clear |
| J2 | Watchdog timer output |
| SW2 | CPU type select (reserved) |
| SW3 | DiskOnChip® 2000 address setting |

Table 1-2: Connectors

| Label | Function |
|---|---|
| CN1 | Primary IDE connector |
| CN2 | Secondary IDE connector |
| CN3 | Floppy drive connector |
| CN4 | Parallel port |
| CN5 | SCSI connector |
| CN6 | USB port |
| CN7 | VGA connector |
| CN8 | 10/100Base-T Ethernet connector |
| CN9 | Serial port: COM1 |
| CN10 | Serial port: COM2 |
| CN11 | PS/2 keyboard and mouse connector |
| CN12 | External keyboard connector |
| CN13 | Infrared (IR) connector |
| CN14 | CPU fan connector |
| CN16 | Keyboard lock and power LED |
| CN17 | External speaker |
| CN18 | Reset connector |
| CN19 | HDD LED connector |
| CN20 | ATX feature connector |
| CN21 | ATX soft power switch |
| CN22 | Reserved (Default closed) |

## 1.6 Board Layout: Jumper and Connector Locations

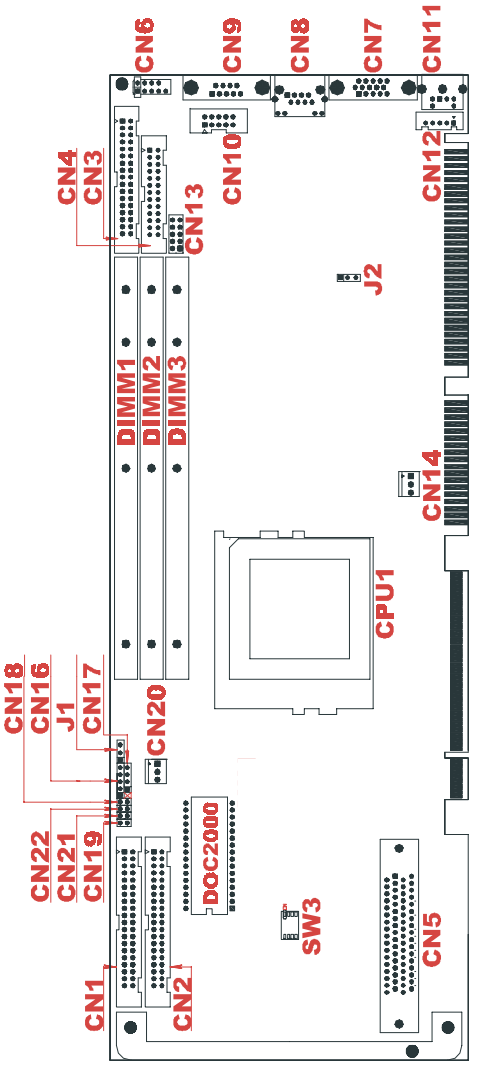



**Figure 1-2: Board layout: jumper and connecter locations**

## 1.7 Safety Precautions

***Warning!*** *Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.*

***Caution!*** *Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.*

## 1.8 Jumper Settings

This section provides instructions on how to configure your card by setting jumpers. It also includes the card's default settings and your options for each jumper.

### 1.8.1 How to set jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge that closes an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” (or turn ON) a jumper, you connect the pins with the clip. To “open” (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2, and 3. In this case you connect either pins 1 and 2, or 2 and 3.

A pair of needle-nose pliers may be useful when setting jumpers.

### 1.8.2 CPU clock ratio setting (SW1)

You must configure your PCA-6179 CPU card to the frequency of your Intel® Coppermine processor by setting jumper SW1. The PCA-6179 SW1 jumper is equpped to use Intel Coppermine processors with speed ratios of 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5 6, 6.5, 7, 7.5, 8, 8.5, 9, or 9.5 with a bus clock speed of 133 MHz. Configure your PCA-6179 as follows:

### 1.8.4 CMOS clear (J1)

The PCA-6179 CPU card contains a jumper that can erase CMOS data and reset the system BIOS information. Normally this jumper should be set with pins 1-2 closed. If you want to reset the CMOS data, set J1 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed. This procedure will reset the CMOS to its default setting.

Table 1-5: CMOS clear (J1)

| Function | Jumper setting | |
|---|---|---|
| * Keep CMOS data | 1-2 closed | |
| Clear CMOS data | 2-3 closed | |

* default setting

### 1.8.5 Watchdog timer output (J2)

The PCA-6179 contains a watchdog timer that will reset the CPU or send a signal to IRQ11 in the event the CPU stops processing. This feature means the PCA-6179 will recover from a software failure or an EMI problem. The J2 jumper settings control the outcome of what the computer will do in the event the watchdog timer is tripped.

Table 1-6: Watchdog timer output (J2)

| Function | Jumper setting | |
|---|---|---|
| IRQ11 | 1-2 closed | |
| * Reset | 2-3 closed | |

* default setting

### 1.8.5 DiskOnChip® 2000 Flash disk address select (SW3)

The PCA-6179 includes a 32-pin socket for M-Systems' DiskOnChip® 2000 Flash disk module. This revolutionary solid state disk enables critical system information to be stored within an on-board Flash disk for virtually instantaneous data access.

You must specify the memory address you want to use for your DiskOnChip 2000 Flash disk module by setting jumper (SW3). Available settings are as follows:

Table 1-7: DiskOnChip® 2000 Flash disk memory address jumper settings (J3)

| Segment | SW3-1 | SW3-2 | SW3-3 | SW3-4 |
|---|---|---|---|---|
| **CC00h** | ON | ON | OFF | OFF |
| **D000h** | ON | OFF | ON | OFF |
| **D400h** | ON | OFF | OFF | OFF |
| **D800h** | OFF | ON | ON | OFF |
| **DC00h** | OFF | ON | OFF | OFF |
| **E000h** | OFF | OFF | ON | OFF |
| **Disable** | OFF | OFF | OFF | OFF |

## 1.9 System Memory

The top-left edge of the PCA-6179 contains three sockets for 168-pin dual inline memory modules (DIMMs). All three sockets use 3.3 V unbuffered synchronous DRAMs (SDRAM). DIMMs are available in capacities of 16, 32, 64, 128, 256 or 512 MB. The sockets can be filled in any combination with DIMMs of any size, giving your PCA-6179 single board computer between 16 MB and 1.5 GB of memory. Use the following table to calculate the total DRAM memory within your computer:

Table 1-8: DIMM module allocation table

| Socket number | 168-pin DIMM memory |
|---|---|
| 1 | (16, 32, 64, 128, 256 or 512 MB) x 1 |
| 2 | (16, 32, 64, 128, 256 or 512 MB) x 1 |
| 3 | (16, 32, 64, 128, 256 or 512 MB) x 1 |

### 1.9.1 Sample calculation: DIMM memory capacity

Suppose you install a 128 MB DIMM into your PCA-6179's socket 1 and a 32 MB DIMM into sockets 2 and 3. Your total system memory is 192 MB, calculated as follows:

Table 1-9: DIMM memory capacity sample calculation

| Socket number | 168-pin | DIMM memory | Total memory |
|---|---|---|---|
| 1 | 128 MB | x 1 | 128 MB |
| 2 | 32 MB | x 1 | 32 MB |
| 3 | 32 MB | x 1 | 32 MB |
| **Total memory** | | | **192 MB** |

### 1.9.2 Supplementary information about DIMMs

Your PCA-6179 can accept SDRAM memory chips (with or without parity). Also note:

- If the PCA-6179 operates at 133 MHz, only use PC/133-compliant DIMMs. Most systems will not even boot if non-compliant modules are used. This is due to strict timing issues involved at this speed.
- SDRAM chips are usually thinner and have higher pin density than EDO chips.
- Chips with 9 chips/side support ECC; chips with 8 chips/side do not support ECC.
- Single-sided modules are typically 16, 32 or 64 MB; double-sided modules are usually 32, 64, 128, or 256 MB.

## 1.10 Memory Installation Procedures

To install DIMMs, first make sure the two handles of the DIMM socket are in the "open" position. i.e. The handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

## 1.11 Cache Memory

Since the second level (L2) cache has been embedded into the Intel® Coppermine processor, you do not have to take care of either SRAM chips or SRAM modules. The built-in second level cache in the Coppermine processor yields much higher performance than the external cache memories. The cache size in the Intel® Coppermine processor is 256 KB.

## 1.12 CPU Installation

The PCA-6179 provides a socket 370 for an Intel® Coppermine processor. The CPU on the board must have a fan or heat sink attached, to prevent overheating.

*Warning:* *Without a fan or heat sink, the CPU will overheat and cause damage to both the CPU and the motherboard.*

To install a CPU, first turn off your system and remove its cover. Locate the processor socket 370.

1. Make sure the socket 370 lever is in the upright position. To raise the lever, pull it out to the side a little and raise it as far as it will go.
2. Place the CPU in the empty socket. Follow the instructions that came with the CPU. If you have no instructions, complete the following procedure. Carefully align the CPU so it is parallel to the socket and the notches on the corners of the CPU correspond with the notches on the inside of the socket. Gently slide the CPU in. It should insert easily. If it does not insert easily, pull the lever up a little bit more.
3. Press the lever down. The plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. This is normal and will not damage the CPU.

When the CPU is installed, the lever should snap into place at the side of the socket.

*Note:* *To remove a CPU, pull the lever out to the side a little and raise it as far as it will go. Lift out the CPU.*

When you install a new CPU, be sure to adjust the board settings, such as CPU type and CPU clock. **Improper settings may damage the CPU**.

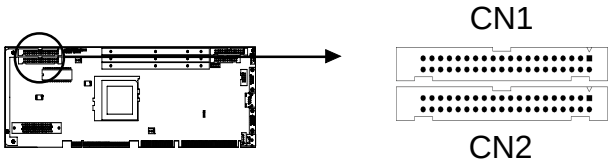
*Important:* *If you are using Intel® BOX CPU with fan, please replace the attached fan to Advantech's approved fan, because of the dimension limitation.*

CHAPTER 2

# Connecting Peripherals

This chapter tells how to connect peripherals, switches and indicators to the PCA-6179 board. You can access most of the connectors from the top of the board while it is installed in the chassis. If you have a number of cards installed, or your chassis is very tight, you may need to partially remove the card to make all the connections.

## 2.1 Primary (CN1) and Secondary (CN2) IDE Connectors




You can attach up to four IDE (Integrated Device Electronics) drives to the PCA-6179's internal controller. The primary (CN1) and secondary (CN2) connectors can each accommodate two drives.

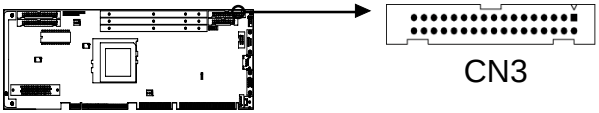
Wire number 1 on the cable is red or blue and the other wires are gray. Connect one end to connector CN1 or CN2 on the CPU card. Make sure that the red/blue wire corresponds to pin 1 on the connector (in the upper right hand corner). See Chapter 1 for help finding the connector.

Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives to a single connector, you will need to set one as the master and one as the slave. You do this by setting the jumpers on the drives. If you use just one drive per connector, you should set each drive as the master. See the documentation that came with your drive for more information.

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which is labeled on the drive circuit board. Check the documentation that came with the drive for more information.

Connect the second hard drive to the remaining connector (CN2 or CN1), in the same way as described above.

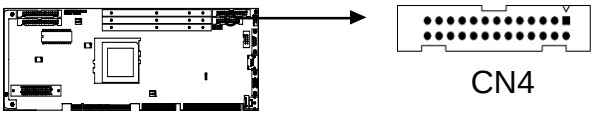
## 2.2 Floppy Drive Connector (CN3)




You can attach up to two floppy disk drives to the PCA-6179's onboard controller. You can use any combination of 5.25" (360 KB / 1.2 MB) and/or 3.5" (720 KB / 1.44/2.88 MB) drives.

The card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3.5" drives) and a printed circuit-board connector (usually used for 5.25" drives). You can use only one connector in each set. The set on the end (after the twist in the cable) connects to the A: floppy drive. The set in the middle connects to the B: floppy drive.

## 2.3 Parallel Port (CN4)

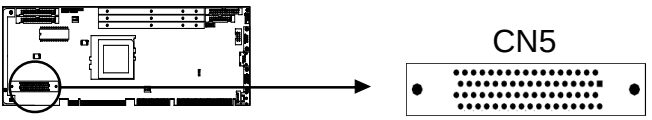



The parallel port is normally used to connect the CPU card to a printer. The PCA-6179 includes an onboard parallel port, accessed through a 26-pin flat-cable connector, CN4. The card comes with an adapter cable which lets you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other, mounted on a retaining bracket. The bracket installs at the end of an empty slot in your chassis, giving you access to the connector.

The parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

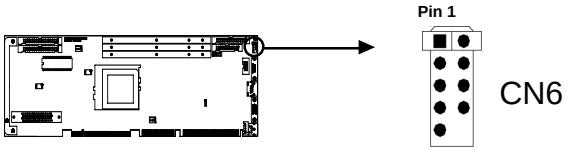
To install the bracket, find an empty slot in your chassis. Unscrew the plate that covers the end of the slot. Screw in the bracket in place of the plate. Next, attach the flat-cable connector to CN4 on the CPU card. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that wire 1 corresponds to pin 1 of CN4. Pin 1 is on the upper right side of CN4.

## 2.4 SCSI Connector (CN5)




The PCA-6179 has a 68-pin, dual in-line connector for Ultra2 Wide SCSI devices. Connection of SCSI devices requires special attention, especially when determining the last drive on the SCSI chain. Refer to Chapter 6 and your device's operating manual for detailed installation advice.

## 2.5 USB Port (CN6)

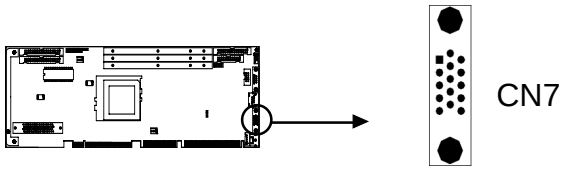



The PCA-6179 provides one USB (Universal Serial Bus) interface, which gives complete Plug & Play and hot attach/detach for up to 127 external devices.The USB interface complies with USB Specification Rev. 1.0 and is fuse-protected.

The USB interface is accessed through a 10-pin flat-cable connector, CN6. The adapter cable has a 10-pin connector on one end and a USB connector on the bracket.

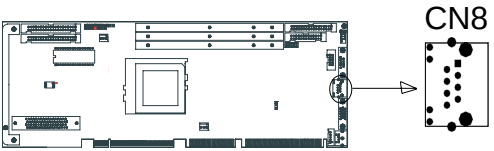
The USB interface can be disabled in the system BIOS setup.

## 2.6 VGA Connector (CN7)



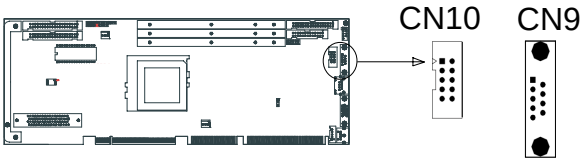

The PCA-6179 includes a AGP SVGA interface that can drive conventional CRT displays. CN7 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector CN7 are detailed in Appendix B.

## 2.7 10/100Base-T Ethernet Connector (CN8)




The PCA-6179 is equipped with a high-performance 32-bit PCI-bus Ethernet interface, which is fully compliant with IEEE 802.3/u 10/100 Mbps CSMA/CD standards. It is supported by all major network operating systems and is 100% Novell NE-2000 compatible. An onboard RJ-45 jack provides convenient 10/100Base-T RJ-45 operation.

## 2.8 Serial Ports (CN9: COM1; CN10: COM2)




The PCA-6179 offers two serial ports, CN9 as COM1 and CN10 as COM2. These ports can connect to serial devices, such as a mouse or printers, or to a communication network.

Table 2-1: Serial port connections (COM1, COM2)

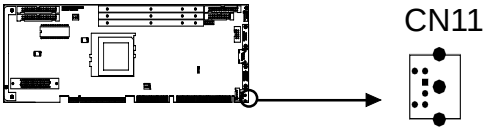
| Connector | Ports | Address | Interrupt |
|---|---|---|---|
| CN9 | COM1 | 3F8*, 3E8 | IRQ4 |
| CN10 | COM2 | 2F8*, 2E8 | IRQ3 |

* default settings

The IRQ and address ranges for both ports are fixed. However, if you want to disable the port or change these parameters later, you can do this in the system BIOS setup.

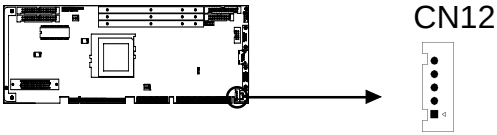
Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

## 2.9 PS/2 Keyboard and Mouse Connector (CN11)



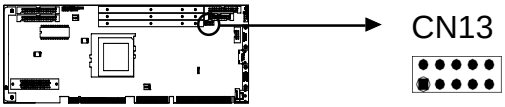

The PCA-6179 board provides a keyboard connector. A 6-pin mini-DIN connector (CN11) on the card mounting bracket supports single-board computer applications. The card comes with an adapter to convert from the 6-pin mini-DIN connector to a standard DIN connector and to a PS/2 mouse connector.

## 2.10 External Keyboard Connector (CN12)



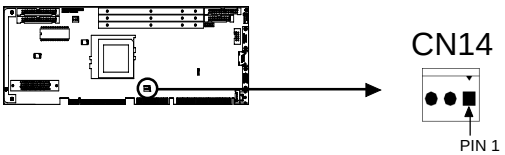

In addition to the PS/2 mouse/keyboard connector on the PCA-6179's rear plate, there is also an extra onboard external keyboard connector. This gives system integrators greater flexibility in designing their systems.

## 2.11 Infrared (IR) Connector (CN13)




This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through the BIOS setup (see Chapter 3).

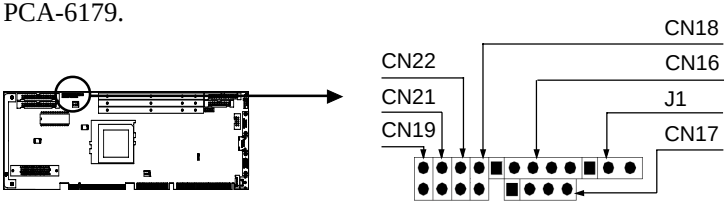
## 2.12 CPU Fan Connector (CN14)




This connector supports cooling fans of 500 mA (6 W) or less.

## 2.13 Front Panel Connectors (CN16, CN17, CN18, CN19, CN21 and CN22)

There are several external switches to monitor and control the PCA-6179.




### 2.13.1 Keyboard lock and power LED (CN16)

CN16 is a 5-pin connector for the keyboard lock and power on LED. Refer to Appendix B for detailed information on the pin assignments. If a PS/2 or ATX power supply is used, the system's power LED status will be as indicated below:

Table 2-2: PS/2 or ATX power supply LED status

| Power mode | LED (PS/2 power) | LED (ATX power) |
|---|---|---|
| System On | On | On |
| System Suspend | Fast flashes | Fast flashes |
| System Off | Off | Slow flashes |

### 2.13.2 External speaker (CN17)

CN17 is a 4-pin connector for an extenal speaker. If there is no external speaker, the PCA-6179 provides an on-board buzzer as an alternative. To enable the buzzer, set pins 3-4 as closed.

### 2.13.3 Reset (CN18)

Many computer cases offer the convenience of a reset button. Connect the wire from the reset button to CN18.

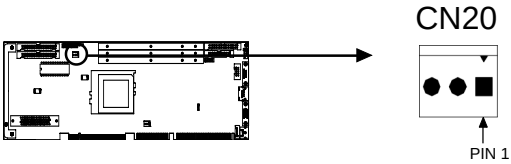
### 2.13.4 HDD LED (CN19)

You can connect an LED to connector CN19 to indicate when the HDD is active.

### 2.13.5 ATX soft power switch (CN21)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to CN21. This connection enables you to turn your computer on and off.

## 2.14 ATX Power Control Connectors (CN20 and CN21)




*Note: Refer to the diagram on the previous page for the location of CN21.*

### 2.14.1 ATX feature connector (CN20) and soft power switch connector (CN21)

The PCA-6179 can support an advanced soft power switch function if an ATX power supply is used. To enable the soft power switch function:

1. Take the specially designed ATX-to-PS/2 power cable out of the PCA-6179's accessory bag.
2. Connect the 3-pin plug of the cable to CN20 (ATX feature connector).
3. Connect the power on/off button to CN21. (A momentary type of button should be used.)

*Note: If you will not be using an ATX power connector, make sure that pins 2-3 are closed.*

*Warnings:* *1. Make sure that you unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your CPU card and expansion cards.*

*2. ATX power supplies may power on if certain motherboard components or connections are touched by metallic objects.*

*Important:* *Make sure that the ATX power supply can take at least a 720 mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system and/or supporting the "Wake on LAN" function.*

### 2.14.2 Controlling the soft power switch

Users can also identify the current power mode through the system's power LED (see Section 2.13.1).

CHAPTER 3

# Award BIOS Setup

This chapter describes how to set the card's BIOS configuration data.

## 3.1 Introduction

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the setup information when the power is turned off.

## 3.2 Entering Setup

Turn on the computer and check for the "patch code". If there is a number assigned to the patch code, it means that the BIOS supports your CPU.

If there is no number assigned to the patch code, please contact Advantech's applications engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid.

After ensuring that you have a number assigned to the patch code, press <Del> to allow you to enter the setup.

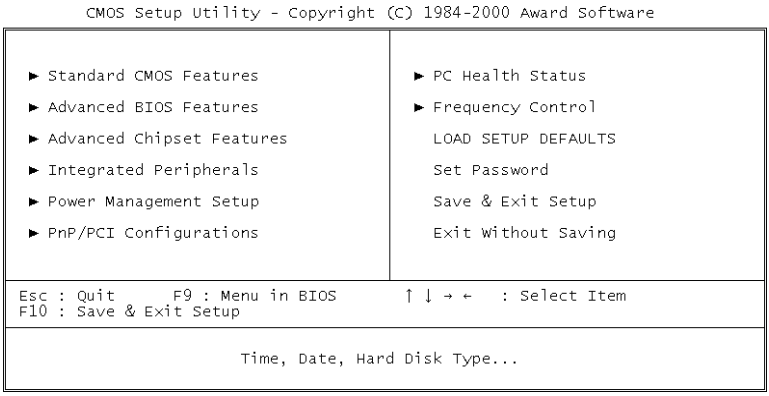

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management Setup
► PnP/PCI Configurations
► PC Health Status
► Frequency Control
LOAD SETUP DEFAULTS
Set Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Time, Date, Hard Disk Type...

Figure 3-1: Award BIOS Setup initial screen

## 3.3 Standard CMOS Features

Choose the “STANDARD CMOS FEATURES” option from the “INITIAL SETUP SCREEN” menu, and the screen below will be displayed. This standard setup menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

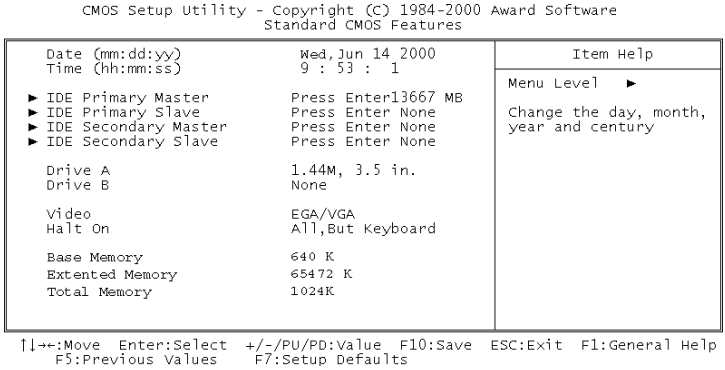

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Standard CMOS Features
Date (mm:dd:yy) Wed,Jun 14 2000
Time (hh:mm:ss) 9 : 53 : 1
► IDE Primary Master Press Enter13667 MB
► IDE Primary Slave Press Enter None
► IDE Secondary Master Press Enter None
► IDE Secondary Slave Press Enter None
Drive A 1.44M, 3.5 in.
Drive B None
Video EGA/VGA
Halt On All,But Keyboard
Base Memory 640 K
Extented Memory 65472 K
Total Memory 1024K
Item Help
Menu Level ►
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

Figure 3-2: Standard CMOS Features screen

## 3.4 Advanced BIOS Features

The “ADVANCED BIOS FEATURES” screen appears when choosing the “ADVANCED BIOS FEATURES” item from the “CMOS SETUP UTILITY” menu. It allows the user to configure the CPU Card according to his particular requirements.

Below are some major items that are provided in the ADVANCED BIOS FEATURES screen.

A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time.

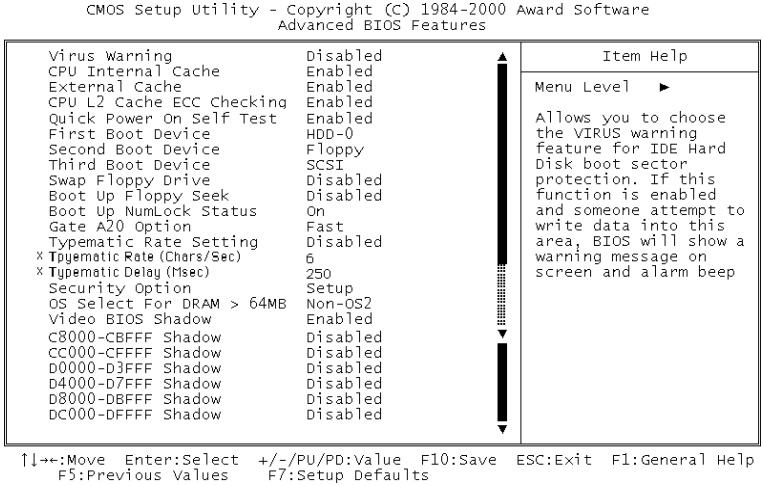

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Advanced BIOS Features
Virus Warning Disabled
CPU Internal Cache Enabled
External Cache Enabled
CPU L2 Cache ECC Checking Enabled
Quick Power On Self Test Enabled
First Boot Device HDD-0
Second Boot Device Floppy
Third Boot Device SCSI
Swap Floppy Drive Disabled
Boot Up Floppy Seek Disabled
Boot Up NumLock Status On
Gate A20 Option Fast
Typematic Rate Setting Disabled
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option Setup
OS Select For DRAM > 64MB Non-OS2
Video BIOS Shadow Enabled
C8000-CBFFF Shadow Disabled
CC000-CFFFF Shadow Disabled
D0000-D3FFF Shadow Disabled
D4000-D7FFF Shadow Disabled
D8000-DBFFF Shadow Disabled
DC000-DFFFF Shadow Disabled
Item Help
Menu Level ►
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

Figure 3-3: Advanced BIOS features screen

### Note: LAN Boot ROM

If your boot device is LAN, when system boot, press <F10> when screen shows:

Realtek RTL8139 (X) PXE/RPL BootROM

Press F10 key to change bootstrap selection.

Current Selection is -- Disable network boot

Then, the following message will be displayed:

Realtek Bootstrap selection menu

1.- Disable network boot

2.- Network boot using interrupt 18h

3.- Network boot using interrupt 19h

4.- Network boot using PnP/BEV (BBS)

5.- Network boot from RPL (Int18h/19h)

Press 1, 2, 3, 4, or 5:

--> The ability to enable the RTL8139(X) BootROM to boot from network depends on underly BIOS support. You should select

1.- disable network boot

If you like to disable RTL8139(X) PXE/RPL bootROM. The Rtl8139(X) will operate normally, but will not attempt to remote boot.

2.- Network boot using interrupt 18h

If your BIOS does not support BBS, but it supports “network boot” in the boot device re-ordering list of the BIOS setup. And then, select “network boot” as the first boot device.

3.- Network boot using interrupt 19h

If your BIOS (older platforms) does not support BBS, nor “ network boot” in the re-ordering list. Using “ Int 19h” will force the RTL8139(X) BootROM to be the first boot device over the Hard Disk and Floppy all the time.

4.- Network boot using PnP/BEV (BBS)

If your BIOS supports BBS. And then, select the PXE ROM as the first boot device.

5.- Network boot from RPL (Int18h/19h)

If you like to remote boot from RPL server.

### 3.4.1 Virus Warning

While the system is booting up, and after boot-up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, a warning message will be displayed. You can run the anti-virus program to locate the problem.

If Virus Warning is disabled, no warning message will appear if

anything attempts to access the boot sector or hard disk partition.

### 3.4.2 Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, the computer conducts normal POST procedures.

### 3.4.3 Boot Up Floppy Seek

During Power-On Self Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. A 360 KB type drive is 40 tracks; while 720 KB, 1.2 MB, and 1.44 MB type drives are all 80 tracks.

Enabled BIOS searches the floppy drive to determine if it is 40 or 80 tracks. Note that BIOS cannot differentiate 720 KB, 1.2 MB, and 1.44 MB type drives. This is because they are all 80 tracks.

Disabled BIOS will not search for the floppy drive type by track number. Note that there will not be any warning message if the drive installed is 360 KB.

### 3.4.4 Boot Up NumLock Status

The default is “On”.

On Keypad boots up to number keys.

Off Keypad boots up to arrow keys.

### 3.4.5 Gate A20 Option

Normal The A20 signal is controlled by the keyboard controller or chipset hardware.

Fast (Default) The A20 signal is controlled by Port 92 or the chipset specific method.

### 3.4.6 Typematic Rate Setting

The typematic rate determines the characters per second accepted by the computer. Typematic Rate Setting enables or disables the typematic rate.

### 3.4.7 Typematic Rate (Chars/Sec)

BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24, 30.

### 3.4.8 Typematic Delay (msec)

Typematic delay is the time interval between the appearance of two consecutive characters, when holding down a key. The input values for this category are: 250, 500, 750, 1000 (msec).

### 3.4.9 Security Option

This setting determines whether the system will boot up if the password is denied. Access to Setup is, however, always limited.

System — The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt.

Setup — The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

*Note: To disable security, select "PASSWORD SETTING" in the main menu. At this point, you will be asked to enter a password. Simply press <Enter> to disable security. When security is disabled, the system will boot, and you can enter Setup freely.*

### 3.4.10 OS Select for DRAM > 64MB

This setting is under the OS/2 system.

### 3.4.11 Video BIOS Shadow

This determines whether video BIOS will be copied to RAM, which is optional according to the chipset design. When enabled, Video BIOS

Shadow increases the video speed.

### 3.4.12 C8000-CBFFF Shadow / DC000-DFFFF Shadow

These determine whether optional ROM will be copied to RAM in blocks of 16 KB.

Enabled Optional shadow is enabled.

Disabled Optional shadow is disabled.

## 3.5 Advanced Chipset Features

By choosing the “ADVANCED CHIPSET FEATURES” option from the INITIAL SETUP SCREEN menu, the screen below will be displayed. This sample screen contains the manufacturer’s default values for the CPU Card.

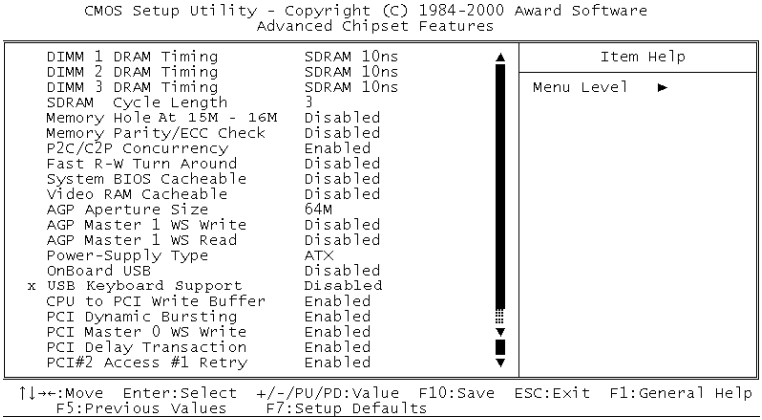

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Advanced Chipset Features
DIMM 1 DRAM Timing SDRAM 10ns
DIMM 2 DRAM Timing SDRAM 10ns
DIMM 3 DRAM Timing SDRAM 10ns
SDRAM Cycle Length 3
Memory Hole At 15M - 16M Disabled
Memory Parity/ECC Check Disabled
P2C/C2P Concurrency Enabled
Fast R-W Turn Around Disabled
System BIOS Cacheable Disabled
Video RAM Cacheable Disabled
AGP Aperture Size 64M
AGP Master 1 WS Write Disabled
AGP Master 1 WS Read Disabled
Power-Supply Type ATX
OnBoard USB Disabled
x USB Keyboard Support Disabled
CPU to PCI Write Buffer Enabled
PCI Dynamic Bursting Enabled
PCI Master 0 WS Write Enabled
PCI Delay Transaction Enabled
PCI#2 Access #1 Retry Enabled
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

Figure 3-4: Advanced Chipset features screen

### 3.5.1 Memory Hole At 15 M ~ 16 M

Enabling this feature reserves 15 MB to 16 MB memory address space for ISA expansion cards that specifically require this setting. This makes memory from 15 MB and up unavailable to the system. Expansion cards can only access memory up to 16 MB. The default setting is "Disabled."

### 3.5.2 AGP Aperture Size (MB)

Memory-mapped, graphics data structures can reside in a graphics aperture. The default setting is 64.

## 3.6 Integrated Peripherals

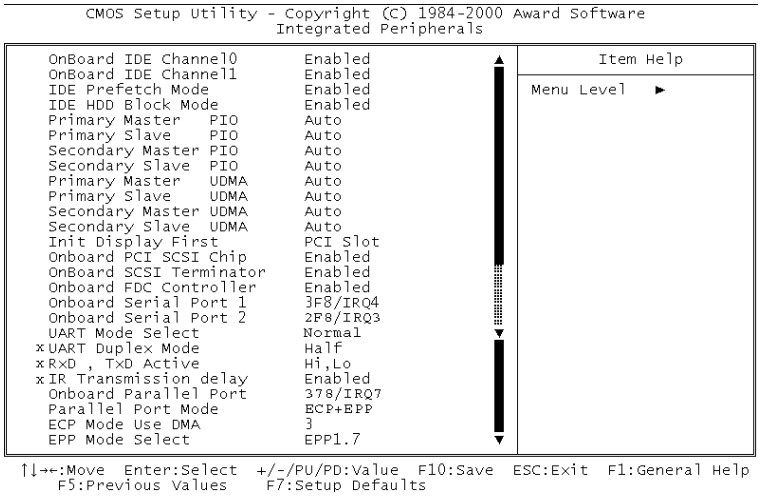

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Integrated Peripherals
OnBoard IDE Channel0 Enabled
OnBoard IDE Channel1 Enabled
IDE Prefetch Mode Enabled
IDE HDD Block Mode Enabled
Primary Master PIO Auto
Primary Slave PIO Auto
Secondary Master PIO Auto
Secondary Slave PIO Auto
Primary Master UDMA Auto
Primary Slave UDMA Auto
Secondary Master UDMA Auto
Secondary Slave UDMA Auto
Init Display First PCI Slot
Onboard PCI SCSI Chip Enabled
OnBoard SCSI Terminator Enabled
Onboard FDC Controller Enabled
Onboard Serial Port 1 3F8/IRQ4
Onboard Serial Port 2 2F8/IRQ3
UART Mode Select Normal
x UART Duplex Mode Half
x RxD , TxD Active Hi,Lo
x IR Transmission delay Enabled
Onboard Parallel Port 378/IRQ7
Parallel Port Mode ECP+EPP
ECP Mode Use DMA 3
EPP Mode Select EPP1.7
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

Figure 3-5: Integrated peripherals

### 3.6.1 IDE HDD Block Mode

If you enable IDE HDD Block Mode, the enhanced IDE driver will be

enabled. Leave IDE HDD Block Mode on the default setting.

### 3.6.2 IDE Primary Master/Slave PIO/UDMA Mode, IDE Secondary Master/Slave PIO/UDMA Mode (Auto)

Each channel (Primary and Secondary) has both a master and a slave, making four IDE devices possible. Because each IDE device may have a different Mode timing (0, 1, 2, 3, 4), it is necessary for these to be independent. The default setting "Auto" will allow autodetection to ensure optimal performance.

### 3.6.3 Onboard FDC Controller

When enabled, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to Disabled.

### 3.6.4 Onboard Serial Port 1 (3F8H/IRQ4)

The settings are 3F8H/IRQ4, 2F8H/IRQ3, 3E8H/IRQ4, 2E8H/IRQ10, and Disabled for the on-board serial connector.

### 3.6.5 Onboard Serial Port 2 (2F8H/IRQ3)

The settings are 3F8H/IRQ4, 2F8H/IRQ3, 3E8H/IRQ4, 2E8H/IRQ10, and Disabled for the on-board serial connector.

### 3.6.6 Onboard Parallel Port (378H/IRQ7)

This field sets the address of the on-board parallel port connector. You can select either 3BCH/IRQ7, 378H/IRQ7, 278H/IRQ5 or Disabled. If you install an I/O card with a parallel port, make sure there is no conflict in the address assignments. The CPU card can support up to three parallel ports, as long as there are no conflicts for each port.

### 3.6.7 Parallel Port Mode (ECP + EPP)

This field allows you to set the operation mode of the parallel port. The setting "Normal" allows normal speed operation, but in one

direction only. “EPP” allows bidirectional parallel port operation at maximum speed. “ECP” allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum data transfer rate. “ECP + EPP” allows normal speed operation in a two-way mode.

### 3.6.8 ECP Mode Use DMA

This selection is available only if you select “ECP” or “ECP + EPP” in the Parallel Port Mode field. In ECP Mode Use DMA, you can select DMA channel 1, DMA channel 3, or Disable. Leave this field on the default setting.

## 3.7 Power Management Setup

The power management setup controls the CPU card’s “green” features. The following screen shows the manufacturer’s defaults:

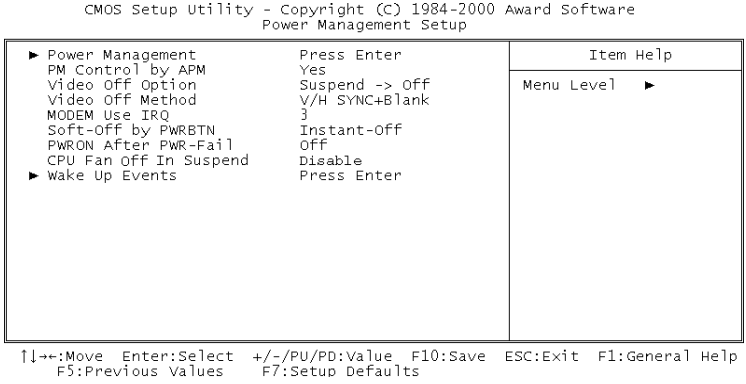
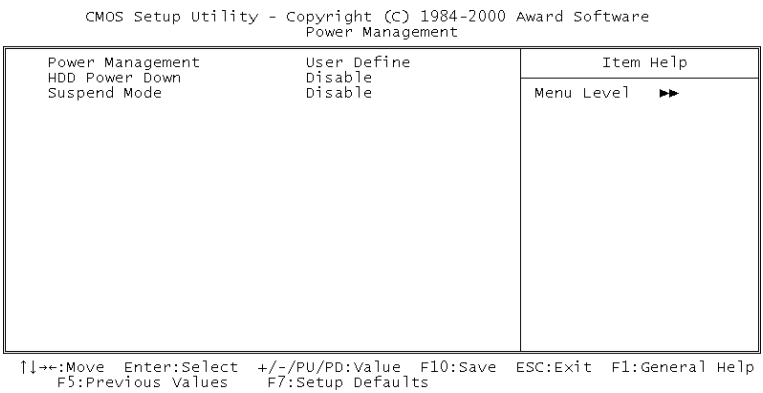

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Power Management Setup
► Power Management Press Enter
PM Control by APM Yes
Video Off Option Suspend -> Off
Video Off Method V/H SYNC+Blank
MODEM Use IRQ 3
Soft-Off by PWRBTN Instant-Off
PWRON After PWR-Fail Off
CPU Fan Off In Suspend Disable
► Wake Up Events Press Enter
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

Figure 3-6: Power management setup screen

### 3.7.1 Power Management

This option allows you to determine if the values in power management are disabled, user-defined, or predefined.


CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Power Management
Power Management User Define
HDD Power Down Disable
Suspend Mode Disable
Item Help
Menu Level ►►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

### 3.7.2 HDD Power Down

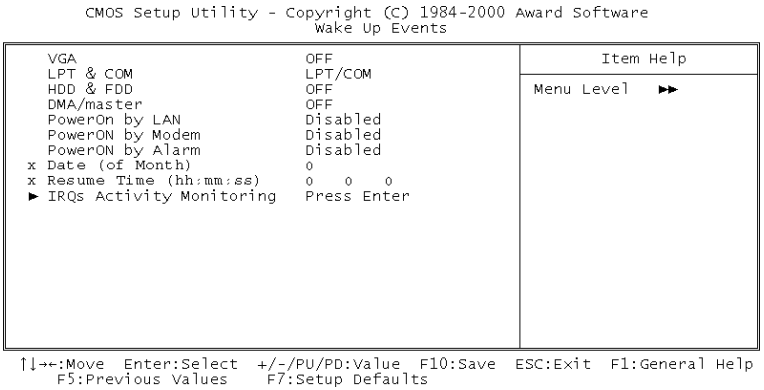
You can choose to turn the HDD off after one of the time intervals listed, or when the system is in “suspend” mode. If the HDD is in a power saving mode, any access to it will wake it up.

### 3.7.3 Soft-Off by PWR-BTTN

If you choose “Instant-Off”, then pushing the ATX soft power switch button once will switch the system to “system off” power mode.

You can choose “Delay 4 sec.” If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to “suspend” mode.

## 3.7.4 Wakeup Event


CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Wake Up Events
VGA OFF
LPT & COM LPT/COM
HDD & FDD OFF
DMA/master OFF
PowerOn by LAN Disabled
PowerON by Modem Disabled
PowerON by Alarm Disabled
x Date (of Month) 0
x Resume Time (hh:mm:ss) 0 0 0
► IRQs Activity Monitoring Press Enter
Item Help
Menu Level ►►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

## 3.7.5 IRQs Activity Monitoring

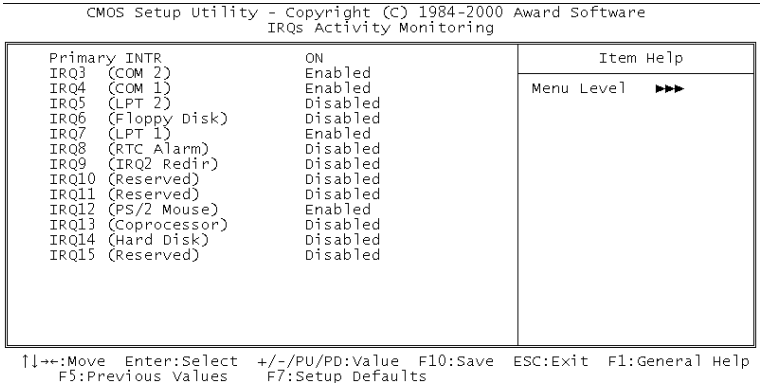
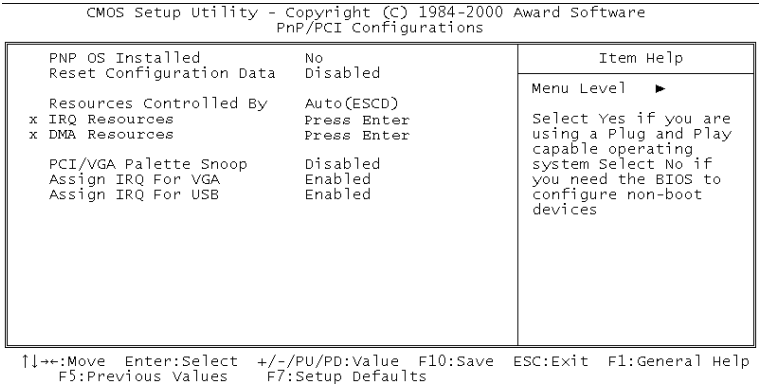

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
IRQs Activity Monitoring
Primary INTR ON
IRQ3 (COM 2) Enabled
IRQ4 (COM 1) Enabled
IRQ5 (LPT 2) Disabled
IRQ6 (Floppy Disk) Disabled
IRQ7 (LPT 1) Enabled
IRQ8 (RTC Alarm) Disabled
IRQ9 (IRQ2 Redir) Disabled
IRQ10 (Reserved) Disabled
IRQ11 (Reserved) Disabled
IRQ12 (PS/2 Mouse) Enabled
IRQ13 (Coprocessor) Disabled
IRQ14 (Hard Disk) Disabled
IRQ15 (Reserved) Disabled
Item Help
Menu Level ►►►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

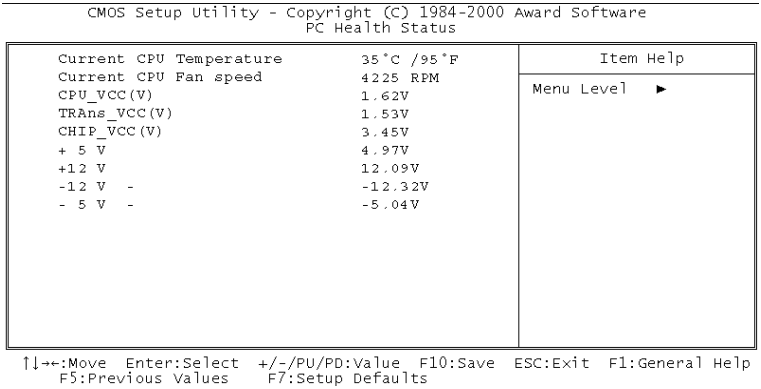
Figure 3-7: IRQs Activity Monitoring

## 3.8 PnP/PCI Configurations

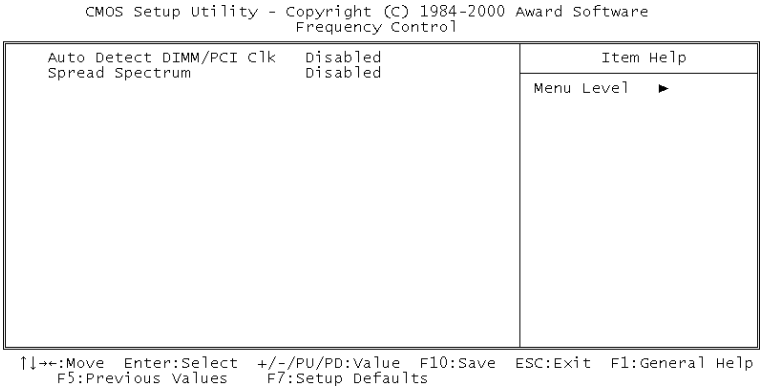

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
PnP/PCI Configurations
PNP OS Installed No
Reset Configuration Data Disabled
Resources Controlled By Auto(ESCD)
x IRQ Resources Press Enter
x DMA Resources Press Enter
PCI/VGA Palette Snoop Disabled
Assign IRQ For VGA Enabled
Assign IRQ For USB Enabled
Item Help
Menu Level ►
Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

## 3.9 PC Health Status

If you enable the OBS function, you can view the temperature, fan speed and voltage of your PC system. The data will be displayed in similar fashion to the display shown in following:


CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
PC Health Status
Current CPU Temperature 35°C /95°F
Current CPU Fan speed 4225 RPM
CPU_VCC(V) 1.62V
TRAns_VCC(V) 1.53V
CHIP_VCC(V) 3.45V
+ 5 V 4.97V
+12 V 12.09V
-12 V - -12.32V
- 5 V - -5.04V
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

## 3.10 Frequency Control


CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Frequency Control
Auto Detect DIMM/PCI Clk Disabled
Spread Spectrum Disabled
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Setup Defaults

## 3.11 Load Setup Defaults

"LOAD SETUP DEFAULTS" loads the values required by the system for maximum performance.

## 3.12 Set Password

To change the password:

1. Choose the "SET PASSWORD" option from the Setup main menu and press <Enter>.

   The screen will display the following message:

   ```
   Enter Password:
   ```

   Press <Enter>.

2. If the CMOS is good or if this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

```
Confirm Password:
```

   Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password must be no longer than eight (8) characters.

Remember, to enable the password setting feature, you must first select either Setup or System to secure your option in "ADVANCED BIOS FEATURES".

## 3.13 Save & Exit Setup

If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

## 3.14 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones.

CHAPTER 4

# AGP SVGA Setup

The PCA-6179 features an onboard PCI AGP/VGA interface. This chapter provides instructions for installing and operating the software drivers on the display driver CD included in your package.

## 4.1 Before You Begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The enhanced display drivers for the PCA-6179 board are located on the software installation CD. You must install the drivers and utility software by using the supplied SETUP program for DOS drivers.

*Note: The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user's manual before performing the installation.

## 4.2 Features

- Built-in ATI Rage 128 Pro 4X 128-bit 3D multimedia accelerator
- Supports AGP 4X mode with sideband addressing and AGP texturing
- PC 98 compliant
- Superior 3D performance achieved through a floating print setup engine rated at 1.5 million triangles/sec
- Integrated 250 MHz DAC allows 85 Hz refresh at 1600 x 1200 resolution
- Complete local language support
- Power management for full VESA DPMS and EPA Energy Star compliance

- User-friendly installation for Windows 95 and Windows NT
- AGP 1.0 interface
- Supports SDRAM and SGRAM at up to 125 MHz memory clock providing bandwidth up to 2 GB/S across a 128-bit interface.
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

## 4.3 Installation

First, insert CD drive. Then follow the Icons for your PCA Series model number.

Click on the right driver for the auto-installation.

If you are using Win98 or Win2000, please install AGP4x driver first.

CHAPTER 5

# LAN Configuration

The PCA-6179 features an onboard LAN interface. This chapter gives detailed information on Ethernet configuration. It shows you how to configure the card to match your application requirements.

## 5.1 Introduction

The PCA-6179 features an optional 32-bit 10/100 Mbps Ethernet network interface. This interface supports bus mastering architecture and auto-negotiation features. Therefore standard twisted-pair cabling with RJ-45 connectors for both 10 Mbps and 100 Mbps connections can be used. Extensive driver support for commonly-used network systems is also provided.

## 5.2 Features

- Realtek RTL8139C Ethernet LAN controller (fully integrated 10Base-T/100Base-TX)
- Supports Wake-on-LAN remote control function
- Supports up to128 K bytes Boot ROM
- PCI Bus Master complies with PCI Rev. 2.2
- MAC & PHY (10/100 Mbps) interfaces
- Complies to IEEE 802.3X 10Base-T and IEEE 802.3u 100Base-T interfaces
- 3.3 V power supply with 5 V tolerant I/Os
- Single RJ-45 connector gives auto-detection of 10 Mbps or 100 Mbps network data transfer rates and connected cable types
- Supports CardBus. The CIS can be stored in 93C56 or expansion ROM
- Enhancements on ACPI, PCI power management
- Compliant to PC99 standard

## 5.3 Driver Installation

The PCA-6179's onboard Ethernet interface supports all major network operating systems.

The BIOS automatically detects the LAN while booting, and assigns an IRQ level and I/O address. No jumpers or switches are required for user configuration.

The drivers and installation instructions are located in the following directories of the utility CD:

- Dos: Drivers for DOS platforms
- Info: Installation instructions
- Nwserver: Drivers for Novell NetWare
- Wfw: Drivers for Windows 3.11 for Workgroups

Please refer to the text files in the Info directory for detailed information about installing the drivers.

*Note: Operating system vendors may post driver updates on their websites. Please visit the websites of OS vendors to download updated drivers.*

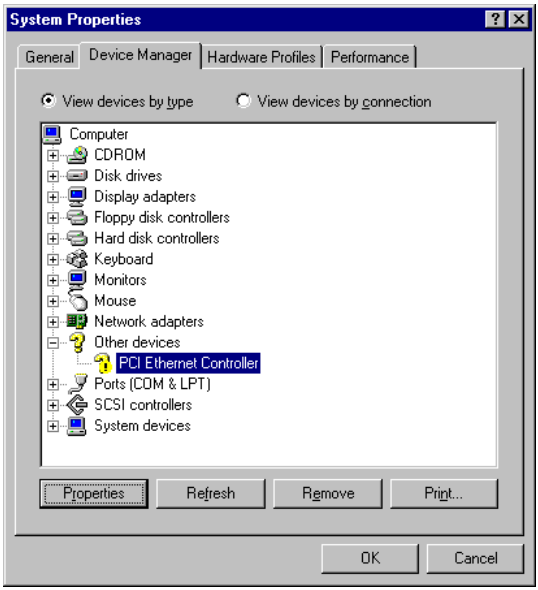
## 5.4 Windows 9X Drivers Setup Procedure

*Note 1: If you are using Windows 98SE, your system will find the LAN device "PCI Ethernet Controller". You must first remove this device from your system, and then restart your computer. Then you will be ready to install the correct driver by following the procedure below.*

*Note 2: The CD-ROM drive is designated as "E" throughout this section.*

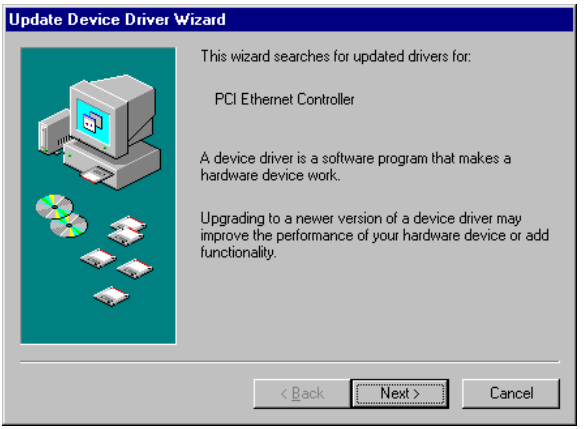
1. In the "Windows" screen, click on "Start" and select "Settings". Then click on the "Control Panel" icon to select "System".

2. In the "System Properties" window, select the "Device Manager" tab. Select "View devices by type", and navigate to: Computer\Other devices\PCI Ethernet Controller. Highlight "PCI Ethernet Controller" and click on "Properties".



3. In the "PCI Ethernet Controller Properties" window, select the "Driver" tab. Then click on "Update Driver...".

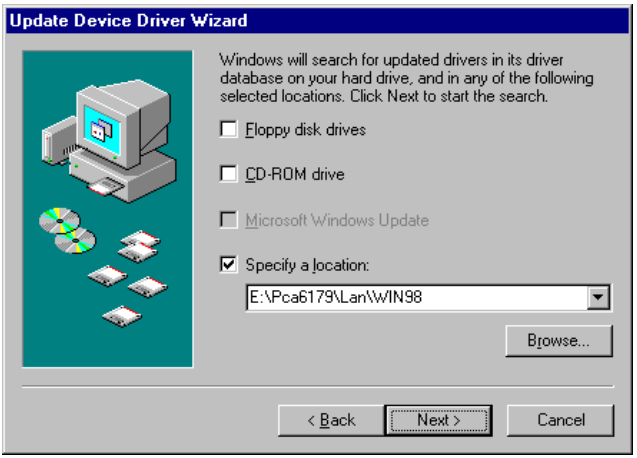
4. In the "Update Device Driver Wizard" window, click on "Next".


Update Device Driver Wizard
This wizard searches for updated drivers for:
PCI Ethernet Controller
A device driver is a software program that makes a hardware device work.
Upgrading to a newer version of a device driver may improve the performance of your hardware device or add functionality.
< Back
Next >
Cancel

5. Click "Next".

Update Device Driver Wizard
What do you want Windows to do?
Search for a better driver than the one your device is using now. (Recommended)
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

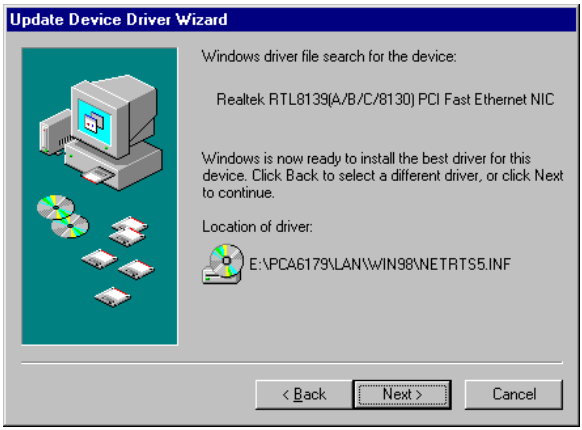
6. In the following "Update Device Driver Wizard" window, select "Specify a location:". Type in: "E:\PCA6178\LAN". Then click on "Next".


Update Device Driver Wizard
Windows will search for updated drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
E:\Pca6179\Lan\WIN98
Browse...
< Back
Next >
Cancel

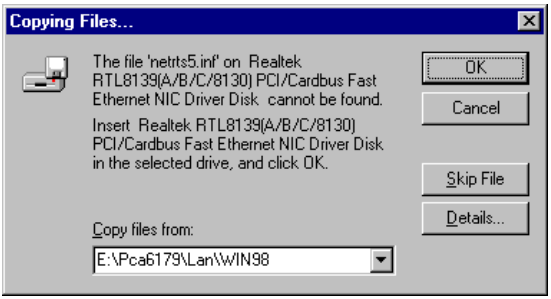
7. In the following "Update Device Driver Wizard" window, select "The updated driver ...". Then click on "Next".

Update Device Driver Wizard
Windows has found an updated driver for this device, and also some other drivers that should work with this device.
What do you want to install?
The updated driver (Recommended)
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
One of the other drivers.
View List...
< Back
Next >
Cancel

8. In the following "Update Device Driver Wizard" window, click on "Next".

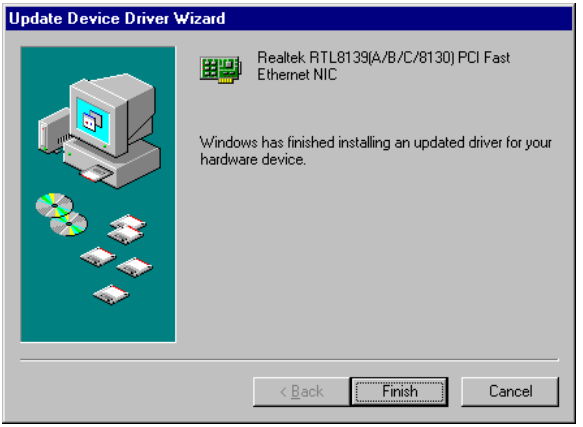

Update Device Driver Wizard
Windows driver file search for the device:
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
E:\PCA6179\LAN\WIN98\NETRTS5.INF
< Back
Next >
Cancel

9. In the "Copying Files..." window, the correct file path should be: E:\PCA6179\LAN\WIN98. When you have the correct location, click on "OK".


Copying Files...
The file 'netrts5.inf' on Realtek RTL8139(A/B/C/8130) PCI/Cardbus Fast Ethernet NIC Driver Disk cannot be found.
Insert Realtek RTL8139(A/B/C/8130) PCI/Cardbus Fast Ethernet NIC Driver Disk in the selected drive, and click OK.
Copy files from:
E:\Pca6179\Lan\WIN98
OK
Cancel
Skip File
Details...

10. When the "Insert Disk" window appears, insert the utility CD into the CD-ROM drive. Then click on "OK".

11. When the "Update Device Driver Wizard" window shows, click on finish.


Update Device Driver Wizard
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
Windows has finished installing an updated driver for your hardware device.
< Back
Finish
Cancel

12. In the "System Settings change" window, select  click on "Yes".

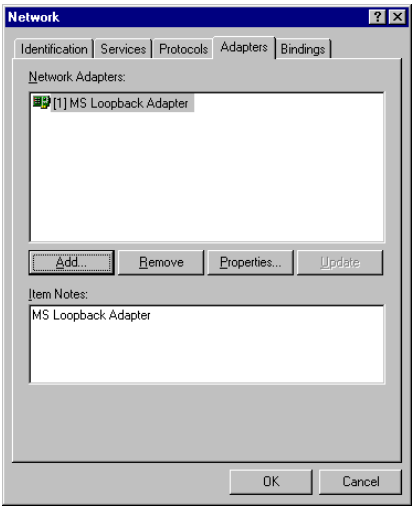
System Settings Change
To finish setting up your new hardware, you must restart your computer.
Do you want to restart your computer now?
Yes
No

## 5.5 Windows NT Drivers Setup Procedure

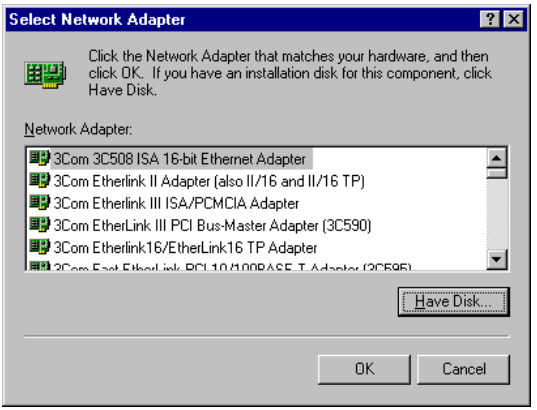
*Note: The CD-ROM drive is designated as "E" throughout this section.*

1. In the "Windows NT" screen, click on "Start" and select "Settings". Then click on the "Control Panel" icon to select "Network".

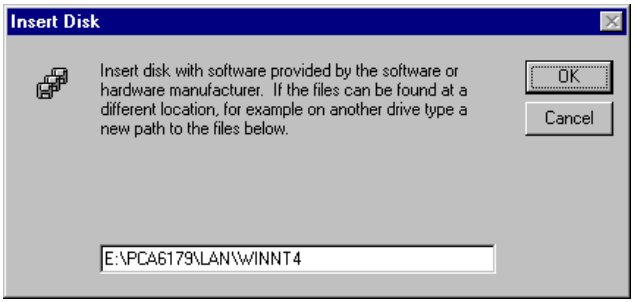
2. In the "Network" window, select the "Adapters" tab. Then click on "Add...".



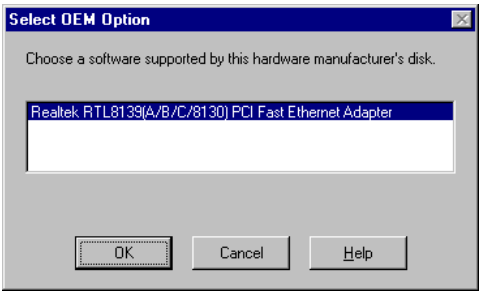
3. In the "Select Network Adapter" window, click on "Have Disk...".


Select Network Adapter
Click the Network Adapter that matches your hardware, and then click OK. If you have an installation disk for this component, click Have Disk.
Network Adapter:
3Com 3C508 ISA 16-bit Ethernet Adapter
3Com Etherlink II Adapter (also II/16 and II/16 TP)
3Com Etherlink III ISA/PCMCIA Adapter
3Com EtherLink III PCI Bus-Master Adapter (3C590)
3Com Etherlink16/EtherLink16 TP Adapter
Have Disk...
OK
Cancel

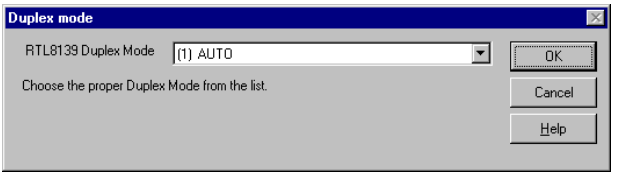
4. When the "Insert Disk" window appears, insert the utility CD into the CD-ROM drive. The correct file path is; E:\PCA6179\LAN\WINNT4. When you have the correct file path, click on "OK".


Insert Disk
Insert disk with software provided by the software or hardware manufacturer. If the files can be found at a different location, for example on another drive type a new path to the files below.
OK
Cancel
E:\PCA6179\LAN\WINNT4

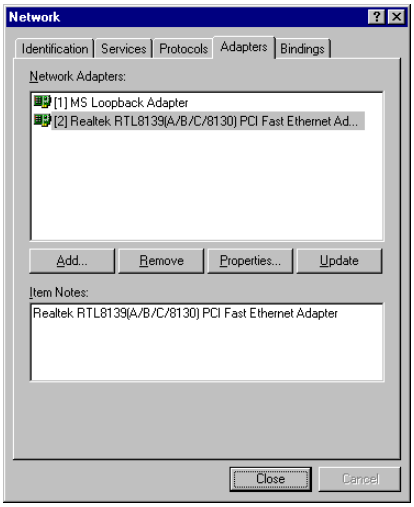
5. In the "Select OEM Option" window, click on "OK".



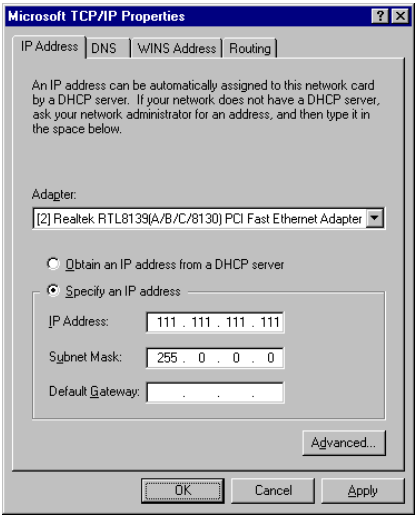

6. In the "Duplex mode", click "OK".



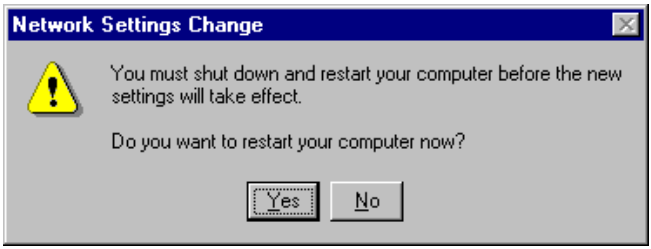
7. In the "Network" window, select the "Adapters" tab. Under "Network Adapters:", highlight "Realtek RTL8139CA/B/C(8130).




8. In the "Microsoft TCP/IP Properties" window, select the "IP Address" tab. Then select "Specify an IP address". Type in the IP Address and Subnet Mask details. Then click on "OK".


Microsoft TCP/IP Properties
IP Address
DNS
WINS Address
Routing
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.
Adapter:
[2] Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter
Obtain an IP address from a DHCP server
Specify an IP address
IP Address:
111 . 111 . 111 . 111
Subnet Mask:
255 . 0 . 0 . 0
Default Gateway:
Advanced...
OK
Cancel
Apply

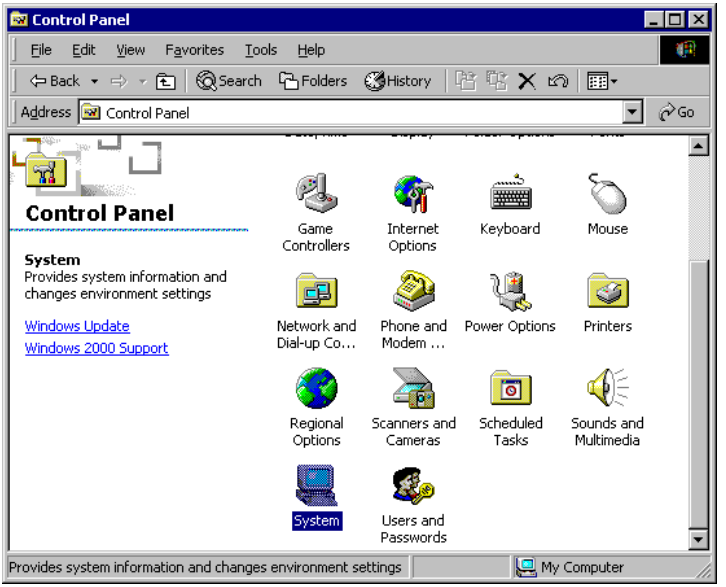
9. In the "Network Settings Change" window, click on "Yes".


Network Settings Change
You must shut down and restart your computer before the new settings will take effect.
Do you want to restart your computer now?
Yes
No

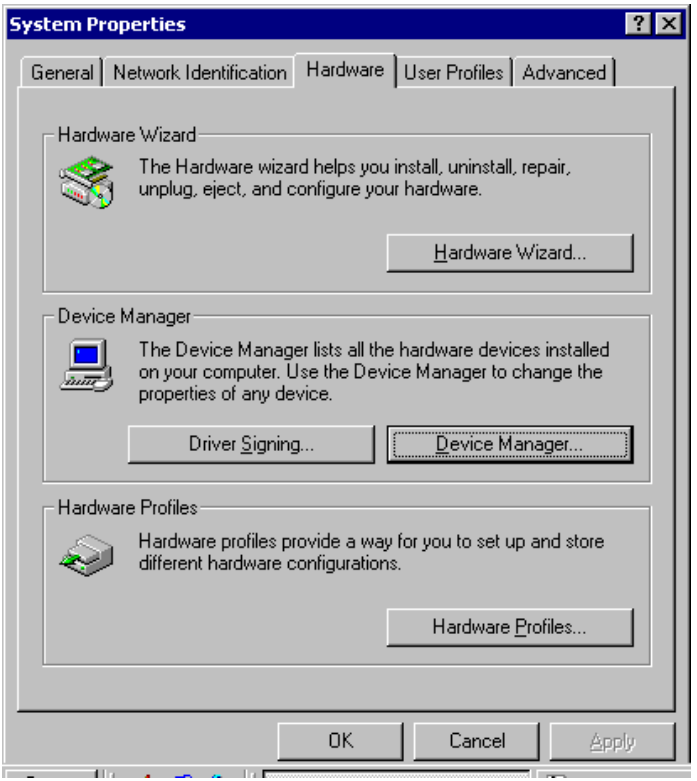
## 5.6 Windows 2000 Drivers Setup Procedure

Note: The CD-ROM drive is designed as "E" throughout this section.

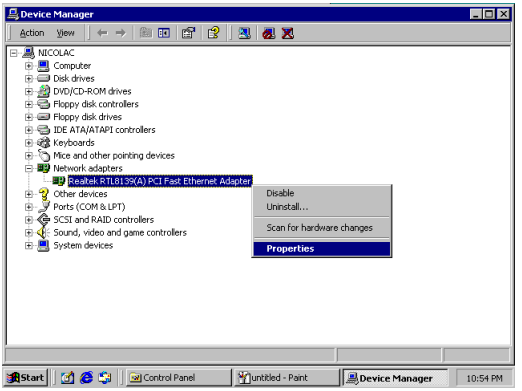
1. In the "Windows 2000" screen, click on " Start" and select " settings". Then click on the " Control Panel" icon to select "system".



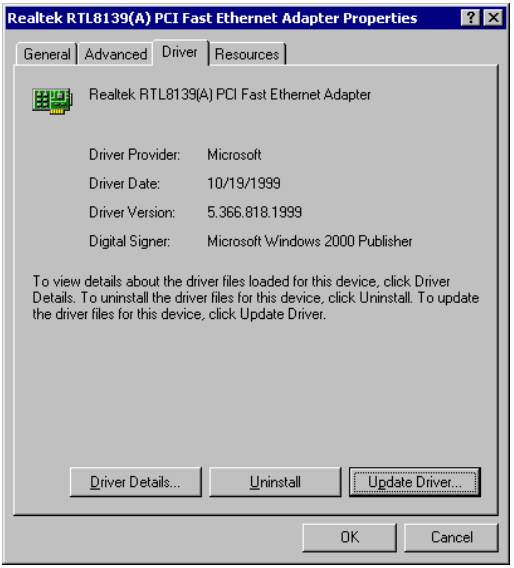
2. In the " System Properties" window, select the " Device Manager".


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

3. In "Device Manager" screen, follow the screen instructions, to click on "Properties".



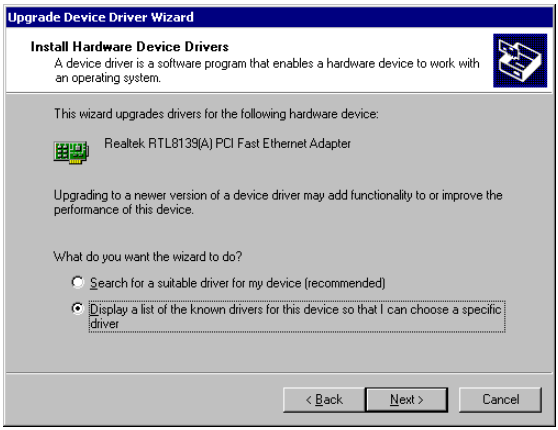

4. In the following screen, to click on "Update Driver".


Realtek RTL8139(A) PCI Fast Ethernet Adapter Properties
General
Advanced
Driver
Resources
Realtek RTL8139(A) PCI Fast Ethernet Adapter
Driver Provider: Microsoft
Driver Date: 10/19/1999
Driver Version: 5.366.818.1999
Digital Signer: Microsoft Windows 2000 Publisher
To view details about the driver files loaded for this device, click Driver Details. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.
Driver Details...
Uninstall
Update Driver...
OK
Cancel

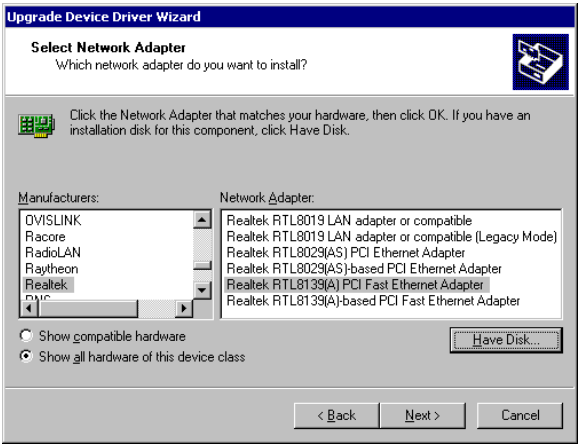
5. Click on "Next".

Upgrade Device Driver Wizard
Welcome to the Upgrade Device Driver Wizard
This wizard helps you upgrade a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

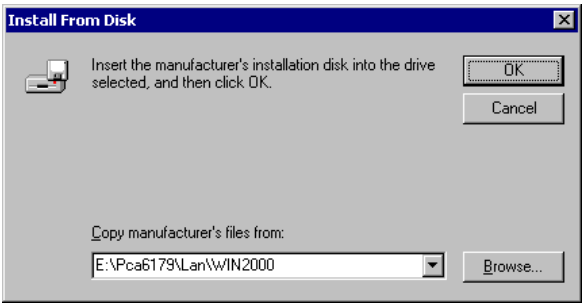
6. Following the highlighted item, and click on "Next".


Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Realtek RTL8139(A) PCI Fast Ethernet Adapter
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

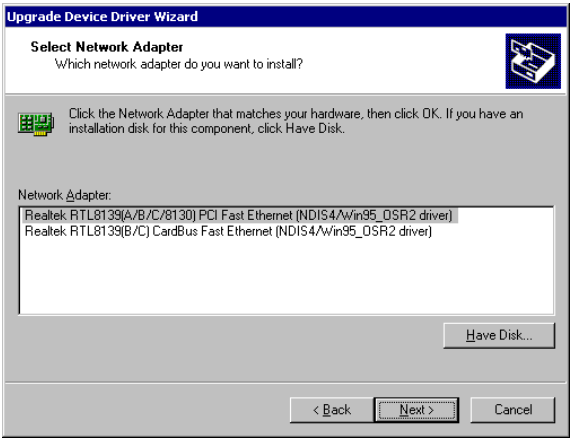
7. Click on "Have Disk".


Upgrade Device Driver Wizard
Select Network Adapter
Which network adapter do you want to install?
Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this component, click Have Disk.
Manufacturers:
OVISLINK
Racore
RadioLAN
Raytheon
Realtek
Network Adapter:
Realtek RTL8019 LAN adapter or compatible
Realtek RTL8019 LAN adapter or compatible (Legacy Mode)
Realtek RTL8029(AS) PCI Ethernet Adapter
Realtek RTL8029(AS)-based PCI Ethernet Adapter
Realtek RTL8139(A) PCI Fast Ethernet Adapter
Realtek RTL8139(A)-based PCI Fast Ethernet Adapter
Show compatible hardware
Show all hardware of this device class
Have Disk...
< Back
Next >
Cancel

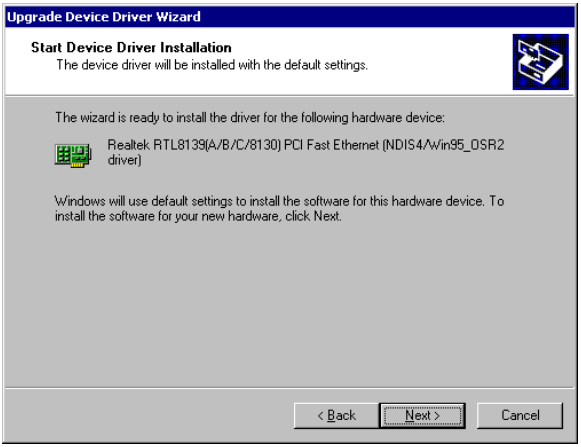
8. Key in "E:\Pca6179\Lan\WIN2000", then click on "OK".



9. To highlight the following item, and click "Next".


Upgrade Device Driver Wizard
Select Network Adapter
Which network adapter do you want to install?
Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this component, click Have Disk.
Network Adapter:
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet (NDIS4/Win95_OSR2 driver)
Realtek RTL8139(B/C) CardBus Fast Ethernet (NDIS4/Win95_OSR2 driver)
Have Disk...
< Back
Next >
Cancel

10. Click "Next".


Upgrade Device Driver Wizard
Start Device Driver Installation
The device driver will be installed with the default settings.
The wizard is ready to install the driver for the following hardware device:
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet (NDIS4/Win95_OSR2 driver)
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel

11. Click "Finish" to complete teh installation.

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

CHAPTER 6

# SCSI Setup and Configurations

The PCA-6179 features an onboard SCSI interface. This chapter provides basic SCSI concepts and instructions for installing the software drivers with the SCSI driver disks/CD included in your package.

## 6.1 Introduction

The PCA-6179 is equipped with a Symbios SYM53C895 single-chip PCI-to-SCSI host adapter which provides a powerful Ultra2 multitasking interface between your computer's PCI bus and SCSI devices (disk drives, CD-ROM drives, scanners, tape backups, removable media drives, etc.). Up to a total of 15 SCSI devices can be connected to the SCSI connector through the Symbios SYM53C895.

The SYMBIOS 53C895 is a 16-bit, LVD/SE (Low Voltage Differential/Single-Ended) SCSI solution for your computer. It can support both legacy Fast SCSI and Ultra SCSI devices, as well as the newest LVD Ultra2 SCSI devices.

If you need to configure the SCSI, the onboard SCSI Select configuration utility allows you to change host adapter settings without opening the computer or handling the board. The SCSI Select utility also contains a utility to low-level format and verifies the disk media on your hard disk drives.

*Note: If any peripheral is attached to the Ultra2 SCSI segment and is running at SE mode, one or more Ultra/Ultra Wide peripherals will be attached to the Ultra2 SCSI segment and will cause the Ultra2 SCSI segment to run at speeds up to 40 MBytes/sec instead of 80 MBytes/sec.*

## 6.2 Before You Begin

SDMS software requires an IBM PC/AT or compatible computer with an 80486 or higher microprocessor. An understanding of basic operating system commands is assumed. In addition, users should have a general knowledge of the SCSI standard.

Before using the SDMS software, you should configure the Symbios SCSI controller into your system, taking into account the configuration of other host adapters and system resources (see Section 6.3).

Symbios recommends that you back up all data before making any changes or installing any software, including the Symbios SCSI controllers and software. Failure to adhere to this accepted computer practice may lead to loss of data.

## 6.3 Basic Rules for SCSI Host Adapter and Device Installation

You must terminate both ends of the SCSI bus. Refer to the hardware manuals for the devices and the host adapter to properly terminate the bus.

Unless your system is SCSI Configured AutoMatically (SCAM) capable, you must configure each SCSI device with a different SCSI ID number. Refer to the hardware manuals for the devices to locate where the jumpers of dip switches are for setting SCSI ID numbers. Usually, the host adapter is ID 7. The devices are then set at IDs 0 through 6 (plus 8 through 15 for Wide SCSI). The bootable hard drive must have the lowest numerical SCSI ID, unless you are able to use the BIOS Boot Specification (BBS).

The red or blue line on a standard SCSI cable (or the black line on one end of a multi-colored SCSI cable) designates pin one on the cable connector and must connect to pin one on the device or host adapter connector. Refer to Appendix B to find Pin 1 of the connector.

## 6.4 Configuring the SCSI Adapter

Access the SCSI BIOS by holding down both the CTRL and C keys when you see the BIOS banner message listing the driver name and the attached devices. For example:

```
Symbios Inc. SDMS (TM) V 4.0 PCI SCSI BIOS

PCI Rev. 2.0, 2.1

Copyright 1995, 1998 Symbios Inc.

PCI-4.12.00

Press Ctrl-C to start Symbios Configuration
Utility...
```

The SCSI Select screen will come up. Instructions on how to move the cursor and select options are listed on the bottom of the program windows. You can select either Configure/View Host Adapter Settings or SCSI CD Utilities.

## 6.5 SCSI Terminators

To ensure reliable communication, the SCSI bus must be properly terminated. Termination is controlled by a set of electrical resistors, called terminators. Terminators must be placed (or enabled) at the two extreme ends of the SCSI bus. All devices that lie between the ends must have their terminators removed (or disabled).

Since the method for terminating a SCSI peripheral can vary widely, refer to the peripheral's documentation for instructions on how to enable or disable termination. Here are some general guidelines for termination:

- Termination on internal SCSI peripherals is usually controlled by manually setting a jumper or switch on the peripheral, or by physically removing or installing one or more resistor modules on the peripheral.
- Termination on external SCSI peripherals is usually controlled by installing or removing a SCSI terminator. On some external peripherals, termination is controlled by setting a switch on the rear of the drive.
- By default, termination on the CPU card itself is automatic (the preferred method).
- Internal Ultra2 peripherals are set at the factory with termination disabled, which cannot be changed. Proper termination for internal Ultra2 peripherals is provided by the built-in terminator at the end of the Ultra2 internal SCSI cable.
- Most non-Ultra2 SCSI peripherals come from the factory with termination enabled.

## 6.6 SDMS Drivers

The SDMS device drivers translate an operating system I/O request into a SCSI request. Each Symbios SCSI device driver is operating system specific and is designed to work on standard Symbios chip implementations.

We provide PCI SDMS device drivers for the following operating systems:

- MS-DOS/Windows
- Windows 95/98
- Windows NT - 3.51 and above
- OS/2 4.x Warp
- SCO UNIX - Open Server 5.0.2 and above
- Novell NetWare - 3.12, 4.11 (NWPA)

*Note: When you start the Windows NT installation with either a CD-ROM boot or from the floppy disks, a black screen will initially appear with the following text at the top:*

```
Setup is inspecting your computer's hardware
configuration...
```

While this is on the screen (before entering the initial blue screen), press the F6 key. Windows NT setup will allow a SCSI driver to be added before the second disk is requested. Add the appropriate driver from a prepared floppy disk. Follow the rest of the instructions to finish the installation.

APPENDIX A

# Programming the Watchdog Timer

The PCA-6179 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

## A.1 Programming the Watchdog Timer

To program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a time interval value. The value range is from 01 (hex) to 3F (hex), and the related time interval is 1 sec. to 63 sec.

| Data | Time Interval |
|---|---|
| 01 | 1 sec. |
| 02 | 2 sec. |
| 03 | 3 sec. |
| 04 | 4 sec. |
| • | • |
| • | • |
| • | • |
| 3F | 63 sec. |

After data entry, your program must refresh the watchdog timer by rewriting I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 443 (hex).

The following example shows how you might program the watchdog timer in BASIC:

```
10        REM  Watchdog timer example program
20        OUT &H443, data REM  Start and restart the watchdog
30        GOSUB 1000 REM  Your application task #1,
40        OUT &H443, data REM  Reset the timer
50        GOSUB 2000 REM  Your application task #2,
60        OUT &H443, data REM  Reset the timer
70        X=INP (&H443) REM  Disable the watchdog timer
80        END

1000      REM  Subroutine #1, your application task
•         •
•         •
•         •
1070      RETURN
2000      REM  Subroutine #2, your application task
•         •
•         •
•         •
2090      RETURN
```

APPENDIX B

# Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- IDE Hard Drive Connector
- Floppy Drive Connector
- Parallel Port Connector
- SCSI Connector
- USB Connector
- VGA Connector
- Ethernet 10/100Base-T RJ-45 Connector
- COM1/COM2 RS-232 Serial Port
- Keyboard and Mouse Connector
- External Keyboard Connector
- IR Connector
- CPU Fan Power Connector
- Power LED and Keylock Connector
- External Speaker Connector
- Reset Connector
- HDD LED Connector
- ATX Feature Connector
- System I/O Ports
- DMA Channel Assignments
- Interrupt Assignments
- 1st MB Memory Map

## B.1 IDE Hard Drive Connector (CN1, CN2)

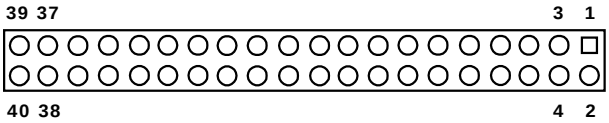



Table B-1: IDE hard drive connector (CN1, CN2)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | IDE RESET* | 2 | GND |
| 3 | DATA 7 | 4 | DATA 8 |
| 5 | DATA 6 | 6 | DATA 9 |
| 7 | DATA 5 | 8 | DATA 10 |
| 9 | DATA 4 | 10 | DATA 11 |
| 11 | DATA 3 | 12 | DATA 12 |
| 13 | DATA 2 | 14 | DATA 13 |
| 15 | DATA 1 | 16 | DATA 14 |
| 17 | DATA 0 | 18 | DATA 15 |
| 19 | SIGNAL GND | 20 | N/C |
| 21 | DISK DMA REQUEST | 22 | GND |
| 23 | IO WRITE | 24 | GND |
| 25 | IO READ | 26 | GND |
| 27 | IO CHANNEL READY | 28 | GND |
| 29 | HDACKO* | 30 | GND |
| 31 | IRQ14 | 32 | N/C |
| 33 | ADDR 1 | 34 | N/C |
| 35 | ADDR 0 | 36 | ADDR 2 |
| 37 | HARD DISK SELECT 0* | 38 | HARD DISK SELECT 1* |
| 39 | IDE ACTIVE* | 40 | GND |

* low active

## B.2 Floppy Drive Connector (CN3)

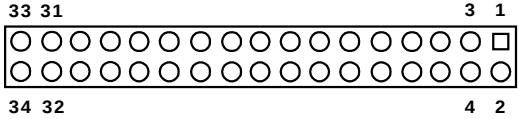



Table B-2: Floppy drive connector (CN3)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 2 | FDHDIN* |
| 3 | GND | 4 | N/C |
| 5 | GND | 6 | FDEDIN* |
| 7 | GND | 8 | INDEX* |
| 9 | GND | 10 | MOTOR 0* |
| 11 | GND | 12 | DRIVE SELECT 1* |
| 13 | GND | 14 | DRIVE SELECT 0* |
| 15 | GND | 16 | MOTOR 1* |
| 17 | GND | 18 | DIRECTION* |
| 19 | GND | 20 | STEP* |
| 21 | GND | 22 | WRITE DATA* |
| 23 | GND | 24 | WRITE GATE* |
| 25 | GND | 26 | TRACK 0* |
| 27 | GND | 28 | WRITE PROTECT* |
| 29 | GND | 30 | READ DATA* |
| 31 | GND | 32 | HEAD SELECT* |
| 33 | GND | 34 | DISK CHANGE* |

* low active

## B.3 Parallel Port Connector (CN4)

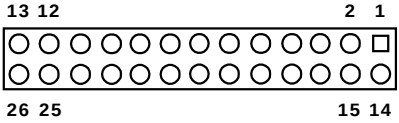



Table B-3: Parallel port connector (CN4)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | STROBE* | 14 | AUTOFD* |
| 2 | D0 | 15 | ERR |
| 3 | D1 | 16 | INIT* |
| 4 | D2 | 17 | SLCTINI* |
| 5 | D3 | 18 | GND |
| 6 | D4 | 19 | GND |
| 7 | D5 | 20 | GND |
| 8 | D6 | 21 | GND |
| 9 | D7 | 22 | GND |
| 10 | ACK* | 23 | GND |
| 11 | BUSY | 24 | GND |
| 12 | PE | 25 | GND |
| 13 | SLCT | 26 | N/C |

* low active

## B.4 SCSI Connector (CN5)

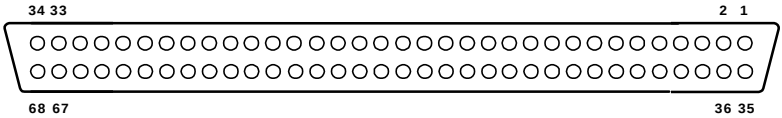



Table B-4: SCSI connector (CN5)

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | SD+12 | 35 | SD-12 |
| 2 | SD+13 | 36 | SD-13 |
| 3 | SD+14 | 37 | SD-14 |
| 4 | SD+15 | 38 | SD-15 |
| 5 | SDP+1 | 39 | SDP-1 |
| 6 | SD+0 | 40 | SD-0 |
| 7 | SD+1 | 41 | SD-1 |
| 8 | SD+2 | 42 | SD-2 |
| 9 | SD+3 | 43 | SD-3 |
| 10 | SD+4 | 44 | SD-4 |
| 11 | SD+5 | 45 | SD-5 |
| 12 | SD+6 | 46 | SD-6 |
| 13 | SD+7 | 47 | SD-7 |
| 14 | SDP+0 | 48 | SDP-0 |
| 15 | GND | 49 | GND |
| 16 | DIFS | 50 | SENIN |
| 17 | TPWEX | 51 | TPWEX |
| 18 | TPWEX | 52 | TPWEX |
| 19 | NC | 53 | NC |
| 20 | GND | 54 | GND |
| 21 | SATN+ | 55 | SATN- |
| 22 | GND | 56 | GND |
| 23 | SBSY+ | 57 | SBSY- |
| 24 | SACK+ | 58 | SACK- |
| 25 | SRST+ | 59 | SRST- |
| 26 | SMSG+ | 60 | SMSG- |
| 27 | SSEL+ | 61 | SSEL- |
| 28 | SCD+ | 62 | SCD- |
| 29 | SREQ+ | 63 | SREQ- |
| 30 | SIO+ | 64 | SIO- |
| 31 | SD+8 | 65 | SD-8 |
| 32 | SD+9 | 66 | SD-9 |
| 33 | SD+10 | 67 | SD-10 |
| 34 | SD+11 | 68 | SD-11 |

## B.5 USB Connector (CN6)

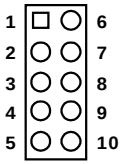



Table B-5: USB1/USB2 connector (CN6)

| Pin | USB1 Signal | Pin | USB2 Signal |
|---|---|---|---|
| 1 | +5 V | 6 | +5 V |
| 2 | UV- | 7 | UV- |
| 3 | UV+ | 8 | UV+ |
| 4 | GND | 9 | GND |
| 5 | Chassis GND | 10 | Key |

## B.6 VGA Connector (CN7)

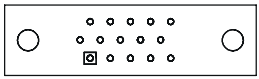


Table B-6: VGA connector (CN7)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | RED | 9 | $V_{CC}$ |
| 2 | GREEN | 10 | GND |
| 3 | BLUE | 11 | N/C |
| 4 | N/C | 12 | SDT |
| 5 | GND | 13 | H-SYNC |
| 6 | GND | 14 | V-SYNC |
| 7 | GND | 15 | SCK |
| 8 | GND | | |

## B.7 Ethernet 10/100Base-T RJ-45 Connector (CN8)

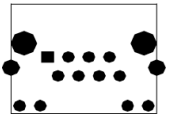
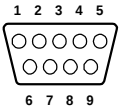


Table B-7: Ethernet 10/100Base-T RJ-45 connector (CN8)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | XMT+ | 5 | N/C |
| 2 | XMT- | 6 | RCV- |
| 3 | RCV+ | 7 | N/C |
| 4 | N/C | 8 | N/C |

## B.8 COM1/COM2 RS-232 Serial Port (CN9, CN10)



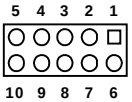




Table B-8: COM1/COM2 RS-232 serial port (CN9, CN10)

| Pin | Signal |
|---|---|
| 1 | DCD |
| 2 | RXD |
| 3 | TXD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

## B.9 Keyboard and Mouse Connnector (CN11)

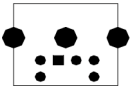


Table B-9: Keyboard and mouse connector (CN11)

| Pin | Signal |
|---|---|
| 1 | KB DATA |
| 2 | MS DATA |
| 3 | GND |
| 4 | $V_{cc}$ |
| 5 | KB CLOCK |
| 6 | MS CLOCK |

## B.10 External Keyboard Connector (CN12)

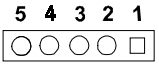



Table B-10: External keyboard connector (CN12)

| Pin | Signal |
|---|---|
| 1 | CLK |
| 2 | DATA |
| 3 | NC |
| 4 | GND |
| 5 | $V_{cc}$ |

## B.11 IR Connector (CN13)

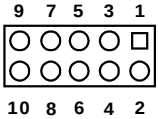



Table B-11: IR connector (CN13)

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | +5 V | 2 | N/C |
| 3 | FIRRX | 4 | CIRRX |
| 5 | IR_RX | 6 | +5VSB |
| 7 | GND | 8 | N/C |
| 9 | IR_TX | 10 | N/C |

## B.12 CPU Fan Power Connector (CN14)

Table B-12: CPU fan power connector (CN14)

| Pin | Signal |
|---|---|
| 1 | GND |
| 2 | +12 V |
| 3 | Detect |

## B.13 Power LED and Keylock Connector (CN16)

You can use an LED to indicate when the CPU card is on. Pin 1 of CN16 supplies the LED's power, and Pin 3 is the ground.

You can use a switch (or a lock) to disable the keyboard so that the PC will not respond to any input. This is useful if you do not want anyone to change or stop a program which is running. Simply connect the switch from Pin 4 to Pin 5 of CN16.

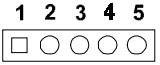



Table B-13: Power LED and keylock connector (CN16)

| Pin | Function |
|---|---|
| 1 | LED power (+5 V) |
| 2 | NC |
| 3 | GND |
| 4 | Keyboard lock |
| 5 | GND |

## B.14 External Speaker Connector (CN17)

The CPU card has its own buzzer. You can also connect it to the external speaker on your computer chassis.

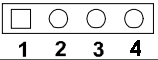



Table B-14: External speaker (CN17)

| Pin | Function |
|---|---|
| 1 | +5 $V_{CC}$ |
| 2 | GND |
| 3 | Internal buzzer |
| 4 | Speaker out |

## B.15 Reset Connector (CN18)

Table B-15: Reset connector (CN18)

| Pin | Signal |
|---|---|
| 1 | GND |
| 2 | RESETIN |

## B.16 HDD LED Connector (CN19)

Table B-16: HDD LED connector (CN19)

| Pin | Signal |
|---|---|
| 1 | $V_{CC}$ (LED+) |
| 2 | LED0 (LED-) |

## B.17 ATX Feature Connector (CN20)

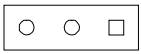



Table B-17: ATX feature connector (CN20)

| Pin | Signal |
|---|---|
| 1 | PS-ON |
| 2 | $V_{CC}$ |
| 3 | $V_{CC}$SB |

## B.18 System I/O Ports

Table B-18: System I/O ports

| Addr. range (Hex) | Device |
|---|---|
| 000-01F | DMA controller |
| 020-021 | Interrupt controller 1, master |
| 022-023 | Chipset address |
| 040-05F | 8254 timer |
| 060-06F | 8042 (keyboard controller) |
| 070-07F | Real-time clock, non-maskable interrupt (NMI) mask |
| 080-09F | DMA page register |
| 0A0-0BF | Interrupt controller 2 |
| 0C0-0DF | DMA controller |
| 0F0 | Clear math co-processor |
| 0F1 | Reset math co-processor |
| 0F8-0FF | Math co-processor |
| 1F0-1F8 | Fixed disk |
| 200-207 | Game I/O |
| 278-27F | Parallel printer port 2 (LPT3) |
| 290-297 | On-board hardware monitor |
| 2F8-2FF | Serial port 2 |
| 300-31F | Prototype card |
| 360-36F | Reserved |
| 378-37F | Parallel printer port 1 (LPT2) |
| 380-38F | SDLC, bisynchronous 2 |
| 3A0-3AF | Bisynchronous 1 |
| 3B0-3BF | Monochrome display and printer adapter (LPT1) |
| 3C0-3CF | Reserved |
| 3D0-3DF | Color/graphics monitor adapter |
| 3F0-3F7 | Diskette controller |
| 3F8-3FF | Serial port 1 |
| 443 | Watchdog timer |

## B.19 DMA Channel Assignments

Table B-19: DMA channel assignments

| Channel | Function |
|---|---|
| 0 | Available |
| 1 | Available |
| 2 | Floppy disk (8-bit transfer) |
| 3 | Available |
| 4 | Cascade for DMA controller 1 |
| 5 | Available |
| 6 | Available |
| 7 | Available |

## B.20 Interrupt Assignments

Table B-20: Interrupt assignments

| Priority | Interrupt# | Interrupt source |
|---|---|---|
| 1 | NMI | Parity error detected |
| 2 | IRQ0 | Interval timer |
| 3 | IRQ1 | Keyboard |
| - | IRQ2 | Interrupt from controller 2 (cascade) |
| 4 | IRQ8 | Real-time clock |
| 5 | IRQ9 | Cascaded to INT 0A (IRQ 2) |
| 6 | IRQ10 | Available |
| 7 | IRQ11 | Available |
| 8 | IRQ12 | PS/2 mouse |
| 9 | IRQ13 | INT from co-processor |
| 10 | IRQ14 | Fixed disk controller |
| 11 | IRQ15 | Available |
| 12 | IRQ3 | Serial communication port 2 |
| 13 | IRQ4 | Serial communication port 1 |
| 14 | IRQ5 | Parallel port 2 |
| 15 | IRQ6 | Diskette controller (FDC) |
| 16 | IRQ7 | Parallel port 1 (print port) |

## B.21 1st MB Memory Map

Table B-21: 1st MB memory map

| Addr. range (Hex) | Device |
|---|---|
| F0000h - FFFFFh | System ROM |
| C8000h - EFFFFh | Unused |
| C0000h - C7FFFh | VGA BIOS |
| B8000h - BFFFFh | CGA/EGA/VGA text |
| B0000h - B7FFFh | Unused |
| A0000h - AFFFFh | EGA/VGA graphics |
| 00000h - 9FFFFh | Base memory |

## B.22 PCI Bus Map

Table B-22: PCI bus map

| Function | Signals: Device ID | INT# pin | GNT# pin |
|---|---|---|---|
| Onboard LAN | AD21 | INT D | GNT E |
| Onboard SCSI | AD20 | INT A | GNT A |
| PCI slot 1 | AD31 | INT B, C, D, A | GNT A |
| PCI slot 2 | AD30 | INT C, D, A, B | GNT B |
| PCI slot 3 | AD29 | INT D, A, B, C | GNT C |
| PCI slot 4 | AD28 | INT A, B, C, D | GNT D |

*Note: In the PCA -6179VS/F, SCSI devices use "GNT A" signals via PCI slot 1. Therefore, PCI slot 1 cannot be used for plug-in bus master add-on cards such as SCSI cards or LAN cards.*

APPENDIX C

# DiskOnChip® 2000 Installation Guide

This appendix contains information on the DiskOnChip® 2000 quick installation guide. It includes:

- DiskOnChip® 2000 Installation Instructions
- Additional Information and Assistance

# C.1 DiskOnChip® 2000 Quick Installation Guide

## C.1.1 DiskOnChip® 2000 installation instructions

1. Make sure the target platform is powered OFF.
2. Plug the DiskOnChip® 2000 device into its socket. Verify the direction is correct (pin 1 of the DiskOnChip 2000 is aligned with pin 1 of the socket).
3. Power up the system.
4. During power up you may observe the messages displayed by the DiskOnChip 2000 when its drivers are automatically loaded into the system's memory.
5. At this stage, the DiskOnChip 2000 can be accessed as any disk in the system.
6. If the DiskOnChip 2000 is the only disk in the system, it will appear as the first disk (drive C: in DOS).
7. If there are more disks besides the DiskOnChip 2000, the DiskOnChip 2000 will appear by default as the last drive, unless it was programmed as the first drive. (Please refer to the DiskOnChip 2000 utilities user manual.)
8. If you want the DiskOnChip 2000 to be bootable:
   a. Copy the operating system files to the DiskOnChip by using the standard DOS command (for example, SYS d:).
   b. The DiskOnChip should be the only disk in the systems or would be configured as the first disk in the system (c:) using the DUPDATE utility.

```
DUPDATE C /S: DOC104.EXB /FIRST   (set as c:)
DUPDATE D /S: DOC104.EXB          (set as d:)
```

### C.1.2 Addtional information and assistance

1. Visit M-Systems' website at **http://www.m-sys.com** where you can find the Utilities Manual, data sheet and Application Notes. In addition, you can find the latest DiskOnChip 2000 software utilities.
2. Contact your dealer for technical support if you need additional assistance, and have the following information ready:
   - Product name and serial number.
   - Description of your computer hardware (manufacturer, model, attached devices, etc.)
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem.
   - The exact wording of any error messages.